

=> fil reg

FILE 'REGISTRY' ENTERED AT 12:03:44 ON 22 JAN 2007

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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 21 JAN 2007 HIGHEST RN 917948-20-0

DICTIONARY FILE UPDATES: 21 JAN 2007 HIGHEST RN 917948-20-0

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH June 30, 2006

Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

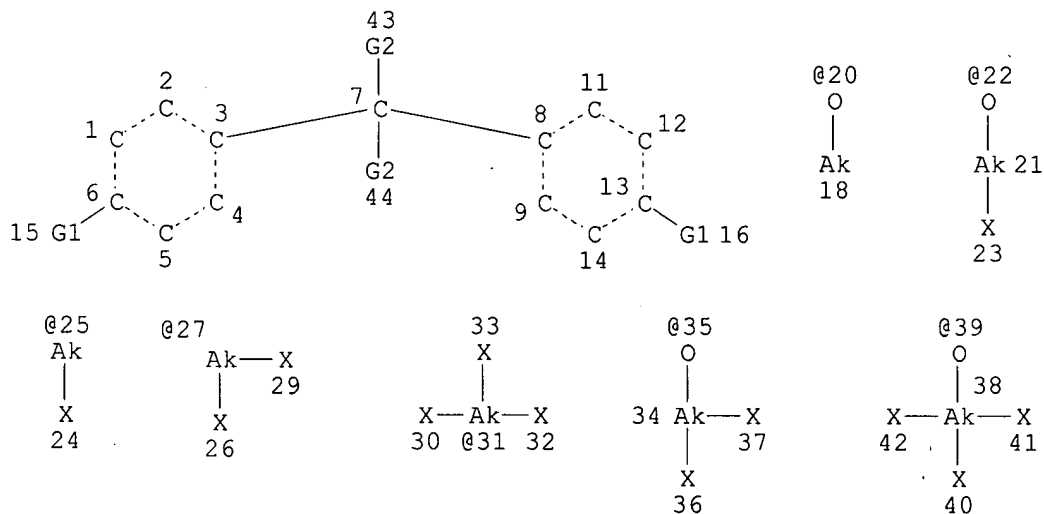
<http://www.cas.org/ONLINE/UG/regprops.html>

=> d sta que 165

L4 SCR 2039 OR 2050 OR 2049 OR 2053 OR 2052 OR 2051 OR 2043 O  
R 2054

L41 SCR 2127

L59 STR



VAR G1=OH/20/AK/22/25/27/31/35/39/X

VAR G2=AK/CB

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 40

STEREO ATTRIBUTES: NONE

L63 300 SEA FILE=REGISTRY CSS FUL L59 NOT (L4 OR L41)  
 L65 221 SEA FILE=REGISTRY ABB=ON PLU=ON L63 NOT IDS/CI

=&gt; d sta que 160

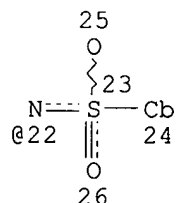
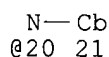
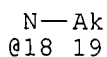
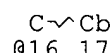
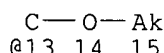
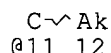
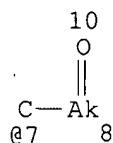
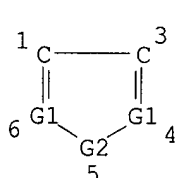
L4 SCR 2039 OR 2050 OR 2049 OR 2053 OR 2052 OR 2051 OR 2043 O

R 2054

L9 54 SEA FILE=REGISTRY ABB=ON PLU=ON (463-79-6/BI OR 10377-51-2/BI  
 OR 105-58-8/BI OR 108-32-7/BI OR 108-88-3/BI OR 117-80-6/BI  
 OR 1192-62-7/BI OR 1193-79-9/BI OR 126-33-0/BI OR 127-63-9/BI  
 OR 131651-65-5/BI OR 13243-65-7/BI OR 1330-20-7/BI OR 14024-11-  
 4/BI OR 14283-07-9/BI OR 162684-16-4/BI OR 16851-82-4/BI OR  
 18424-17-4/BI OR 1889-59-4/BI OR 21324-40-3/BI OR 271-89-6/BI  
 OR 27359-10-0/BI OR 28122-14-7/BI OR 28452-93-9/BI OR 29935-35-  
 1/BI OR 33454-82-9/BI OR 35363-40-7/BI OR 3680-02-2/BI OR  
 37220-89-6/BI OR 39300-70-4/BI OR 4265-27-4/BI OR 4437-85-8/BI  
 OR 462-06-6/BI OR 524-42-5/BI OR 5535-43-3/BI OR 5535-48-8/BI  
 OR 56525-42-9/BI OR 616-38-6/BI OR 620-32-6/BI OR 623-53-0/BI  
 OR 623-96-1/BI OR 625-86-5/BI OR 67-71-0/BI OR 693-98-1/BI OR  
 71-43-2/BI OR 7439-93-2/BI OR 7447-41-8/BI OR 7474-83-1/BI OR  
 77-77-0/BI OR 7791-03-9/BI OR 80-05-7/BI OR 90076-65-6/BI OR  
 95-15-8/BI OR 96-49-1/BI)

L41 SCR 2127

L47 STR



VAR G1=C/11/13/16/7

VAR G2=O/N/S/18/20/22

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 24

STEREO ATTRIBUTES: NONE

L52 787172 SEA FILE=REGISTRY ABB=ON PLU=ON (16.138.5 OR 16.136.9)/RID  
 NOT ((D OR T)/ELS OR 11C# OR 13C# OR 14C# OR C11# OR C13# OR  
 C14# OR 170# OR 180# OR SQL/FA OR (PMS OR IDS OR MXS OR  
 IDS)/CI)

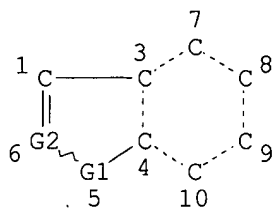
L54 2023 SEA FILE=REGISTRY SUB=L52 CSS FUL L47 NOT (L4 OR L41)

L55 637946 SEA FILE=REGISTRY ABB=ON PLU=ON 16.145.3/RID NOT ((D OR

T)/ELS OR 11C# OR 13C# OR 14C# OR C11# OR C13# OR C14# OR 17O#  
 OR 18O# OR SQL/FA OR (PMS OR IDS OR MXS OR IDS)/CI)  
 L57 1024 SEA FILE=REGISTRY SUB=L55 CSS FUL L47 NOT (L4 OR L41)  
 L58 3047 SEA FILE=REGISTRY ABB=ON PLU=ON (L54 OR L57)  
 L60 4 SEA FILE=REGISTRY ABB=ON PLU=ON L9 AND L58

=> d sta que 113

L1 STR



C~Ak  
@11 12

C~O~Ak  
@14 13 15

C~Cb  
@17 16

VAR G1=O/N/S

VAR G2=C/11/14/17

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 16

STEREO ATTRIBUTES: NONE

L5 636929 SEA FILE=REGISTRY ABB=ON PLU=ON (333.151.57 OR 333.246.11 OR  
 333.200.32)/RID NOT SQL/FA  
 L11 1249 SEA FILE=REGISTRY SUB=L5 CSS FUL L1  
 L12 545 SEA FILE=REGISTRY ABB=ON PLU=ON L11 AND NC>=2  
 L13 704 SEA FILE=REGISTRY ABB=ON PLU=ON L11 NOT L12

=> d sta que 132

L9 54 SEA FILE=REGISTRY ABB=ON PLU=ON (463-79-6/BI OR 10377-51-2/BI  
 OR 105-58-8/BI OR 108-32-7/BI OR 108-88-3/BI OR 117-80-6/BI  
 OR 1192-62-7/BI OR 1193-79-9/BI OR 126-33-0/BI OR 127-63-9/BI  
 OR 131651-65-5/BI OR 13243-65-7/BI OR 1330-20-7/BI OR 14024-11-  
 4/BI OR 14283-07-9/BI OR 162684-16-4/BI OR 16851-82-4/BI OR  
 18424-17-4/BI OR 1889-59-4/BI OR 21324-40-3/BI OR 271-89-6/BI  
 OR 27359-10-0/BI OR 28122-14-7/BI OR 28452-93-9/BI OR 29935-35-  
 1/BI OR 33454-82-9/BI OR 35363-40-7/BI OR 3680-02-2/BI OR  
 37220-89-6/BI OR 39300-70-4/BI OR 4265-27-4/BI OR 4437-85-8/BI  
 OR 462-06-6/BI OR 524-42-5/BI OR 5535-43-3/BI OR 5535-48-8/BI  
 OR 56525-42-9/BI OR 616-38-6/BI OR 620-32-6/BI OR 623-53-0/BI  
 OR 623-96-1/BI OR 625-86-5/BI OR 67-71-0/BI OR 693-98-1/BI OR  
 71-43-2/BI OR 7439-93-2/BI OR 7447-41-8/BI OR 7474-83-1/BI OR  
 77-77-0/BI OR 7791-03-9/BI OR 80-05-7/BI OR 90076-65-6/BI OR  
 95-15-8/BI OR 96-49-1/BI)  
 L16 4 SEA FILE=REGISTRY ABB=ON PLU=ON L9 AND C6-C6/ES  
 L23 STR



DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:  
 RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 17

STEREO ATTRIBUTES: NONE

L38 1852800 SEA FILE=REGISTRY ABB=ON PLU=ON (16.195 OR 16.239 OR  
 16.299)/RID  
 L41 SCR 2127  
 L43 1594677 SEA FILE=REGISTRY ABB=ON PLU=ON L38 NOT (SQL/FA OR (PMS OR  
 CCS OR MNS OR IDS)/CI)  
 L45 545 SEA FILE=REGISTRY SUB=L43 CSS FUL L33 NOT (L4 OR L41)  
 L46 532 SEA FILE=REGISTRY ABB=ON PLU=ON L45 NOT ((D OR T)/ELS OR  
 11C# OR 13C# OR 14C# OR C11# OR C13# OR C14# OR 17O# OR 18O#  
 OR LABELED OR ION)

=> d his

(FILE 'HOME' ENTERED AT 10:30:35 ON 22 JAN 2007)  
 SET COST OFF

FILE 'REGISTRY' ENTERED AT 10:30:41 ON 22 JAN 2007

L1 STR  
 L2 50 S L1 SAM  
 L3 3 S L1 CSS SAM  
 L4 SCR 2039 OR 2050 OR 2049 OR 2053 OR 2052 OR 2051 OR 2043 OR 205  
 L5 636929 S (333.151.57 OR 333.246.11 OR 333.200.32)/RID NOT SQL/FA  
 L6 0 S L1 CSS SAM SUB=L5  
 L7 50 S L1 SAM SUB=L5

FILE 'HCAPLUS' ENTERED AT 10:37:32 ON 22 JAN 2007

L8 1 S US20040185347/PN OR (US2003-658272# OR KR2003-15749)/AP,PRN  
 SEL RN

FILE 'REGISTRY' ENTERED AT 10:38:54 ON 22 JAN 2007

L9 54 S E1-E54  
 L10 3 S L9 AND L5  
 L11 1249 S L1 CSS FUL SUB=L5  
 SAV L11 LAURA658C/A  
 L12 545 S L11 AND NC>=2  
 L13 704 S L11 NOT L12  
 L14 STR  
 L15 0 S L14 CSS SAM  
 L16 4 S L9 AND C6-C6/ES  
 L17 STR L14  
 L18 0 S L17 CSS SAM  
 L19 STR L14  
 L20 0 S L19 CSS SAM  
 L21 STR L19  
 L22 0 S L21 CSS SAM  
 L23 STR L21  
 L24 1 S L23 CSS SAM  
 L25 52177 S (591.49.53 OR 591.49.52)/RID  
 L26 17 S L23 CSS SAM SUB=L25  
 L27 345 S L23 CSS FUL SUB=L25  
 SAV L27 LAURA658D/A  
 L28 307 S L27 AND (IDS/CI OR PMS/CI OR NC>=2)

L29 38 S L27 NOT L28  
 L30 30 S L29 NOT ((D OR T)/ELS OR 11C# OR 13C# OR 14C# OR C11# OR C13#  
 L31 29 S L30 NOT NAPHTHALENYL  
 L32 29 S L16,L31  
 L33 STR  
 L34 0 S L33 CSS SAM  
 L35 1434642 S (NCNC2 OR NCOC2 OR NCSC2)/ES AND 1/NC NOT (SQL/FA OR (MXS OR  
 L36 0 S L33 CSS SAM SUB=L35  
 L37 1 S L9 AND (NCNC2 OR NCOC2 OR NCSC2)/ES  
 L38 1852800 S (16.195 OR 16.239 OR 16.299)/RID  
 L39 4 S L33 CSS SAM SUB=L38  
 L40 1 S L33 NOT L4 CSS SAM SUB=L38  
 L41 SCR 2127  
 L42 0 S L33 NOT (L4 OR L41) CSS SAM SUB=L38  
 L43 1594677 S L38 NOT (SQL/FA OR (PMS OR CCS OR MNS OR IDS)/CI)  
 L44 0 S L33 NOT (L4 OR L41) CSS SAM SUB=L43  
 L45 545 S L33 NOT (L4 OR L41) CSS FUL SUB=L43  
 SAV L45 LAURA658E/A  
 L46 532 S L45 NOT ((D OR T)/ELS OR 11C# OR 13C# OR 14C# OR C11# OR C13#  
 L47 STR  
 L48 6 S L9 AND (NC4 OR OC4 OR SC4)/ES  
 L49 4 S L48 NOT SC4/ES  
 L50 4 S L47 CSS SAM  
 L51 1 S L47 NOT (L4 OR L41) CSS SAM  
 L52 787172 S (16.138.5 OR 16.136.9)/RID NOT ((D OR T)/ELS OR 11C# OR 13C#  
 L53 1 S L47 NOT (L4 OR L41) CSS SAM SUB=L52  
 L54 2023 S L47 NOT (L4 OR L41) CSS FUL SUB=L52  
 L55 637946 S 16.145.3/RID NOT ((D OR T)/ELS OR 11C# OR 13C# OR 14C# OR C11  
 L56 0 S L47 NOT (L4 OR L41) CSS SAM SUB=L55  
 L57 1024 S L47 NOT (L4 OR L41) CSS FUL SUB=L55  
 L58 3047 S L54,L57  
 SAV L58 LAURA658B/A  
 L59 STR  
 L60 4 S L9 AND L58  
 L61 50 S L59 CSS SAM  
 L62 1 S L59 NOT (L4 OR L41) CSS SAM  
 L63 300 S L59 NOT (L4 OR L41) CSS FUL  
 SAV L63 LAURA658A/A  
 L64 1 S L9 AND L63  
 L65 221 S L63 NOT IDS/CI  
 L66 1569 S L63,L65,L49,L60,L10,L13,L32,L37,L46  
 SAV L66 LAURA658F/A  
 L67 41 S L9 NOT L66  
 L68 15 S L67 AND LI/ELS  
 L69 12 S L68 NOT TIS/CI  
 L70 26 S L67 NOT L68  
 L71 11 S L70 AND S/ELS  
 L72 15 S L70 NOT L71  
 L73 3 S L68 NOT L69

FILE 'HCAPLUS' ENTERED AT 11:28:21 ON 22 JAN 2007

L74 73829 S L66  
 L75 500 S L74 AND L69  
 L76 3 S L74 AND L73  
 L77 500 S L75,L76

FILE 'REGISTRY' ENTERED AT 11:28:59 ON 22 JAN 2007

L78 6 S LI/MF NOT MASS

FILE 'HCAPLUS' ENTERED AT 11:29:04 ON 22 JAN 2007

L79 227 S L78 AND L74  
 L80 528 S L77,L79  
     E ELECTROLYTE/CT  
 L81 3 S E3  
 L82 43412 S E18,E23,E26,E27  
 L83 165 S E42  
 L84 4538 S E45-E49  
     E E18+ALL  
 L85 82020 S E4,E10,E12,E14,E23,E24  
     E BATTERIES/CT  
     E E3+ALL  
 L86 119729 S E3 OR E2+OLD,NT OR E3+OLD,NT OR E4+OLD,NT OR E5+OLD,NT  
     E E4+ALL  
 L87 21230 S E7+OLD,NT  
     E SECONDARY BATTERIES/CT  
     E E3+ALL  
 L88 53477 S E7+OLD,NT  
     E E28+ALL  
 L89 135941 S E3 OR E4+OLD,NT  
 L90 115 S L80 AND L81-L89  
 L91 46 S L90 AND L72  
 L92 2 S L91 AND PY<=2003 NOT P/DT  
 L93 28 S L91 AND (PD<=20030313 OR PRD<=20030313 OR AD<=20030313) AND  
 L94 30 S L92,L93  
 L95 90 S L80 AND L72  
 L96 22 S L95 AND PY<=2003 NOT P/DT  
 L97 28 S L94 AND (PD<=20030313 OR PRD<=20030313 OR AD<=20030313) AND  
 L98 50 S L96,L97  
 L99 20 S L98 NOT L94  
     E BATTERY/CT  
 L100 51101 S E4+OLD,NT OR E5+OLD,NT OR E6+OLD,NT OR E7  
     E E9+ALL  
 L101 8752 S E2+OLD,NT OR E3+OLD,NT OR E4+OLD,NT  
     E E3+ALL  
     E E6+ALL  
 L102 35302 S E3+NT  
 L103 50 S L94,L98  
 L104 30 S L103 AND L81-L89,L100-L102  
 L105 20 S L103 NOT L104  
 L106 3 S L104 AND SAMSUN?/PA,CS  
 L107 3 S L104 AND CHEIL?/PA,CS  
     E KIM/AU  
 L108 45 S E3  
     E KIM J/AU  
 L109 2657 S E3,E14-E18  
     E KIM JIN/AU  
 L110 162 S E3  
     E KIM JIN H/AU  
 L111 134 S E3,E11  
     E KIM JINHEE/AU  
 L112 86 S E3  
     E KIM JIN S/AU  
 L113 13 S E3  
 L114 218 S E41  
     E KIM JINS/AU  
 L115 2 S E16  
     E KIM NAME/AU  
 L116 345 S E4  
     E JIN/AU  
 L117 1 S E3

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      E JIN H/AU
L118 156 S E3
L119 24 S E16
      E KIN HEE/AU
      E JIN HEE/AU
      E JIN SUNG/AU
      E JINHEE/AU
      E JINSUNG/AU
      E JIN NAME/AU
L120 7 S E4
      E HWANG/AU
L121 2 S E3
      E HWANG S/AU
L122 96 S E3
L123 112 S E17
      E HWANG SANG/AU
L124 1 S E3
L125 17 S E26
      E HWANG SANGMOON/AU
      E HWANG NAME/AU
L126 7 S E4
      E SANG/AU
L127 2 S E3
      E SANG M/AU
L128 14 S E3
L129 1 S E25
      E SANGMOON/AU
      E PAIK/AU
      E PAIK M/AU
L130 5 S E3,E7
L131 7 S E13,E14
      E MEEN/AU
      E KIM H/AU
L132 1207 S E3
L133 1225 S E39,E40
      E KIM HAK/AU
L134 17 S E3
      E KIM HAK S/AU
L135 16 S E3
L136 62 S E17
      E KIM HAKSOO/AU
L137 1 S E4
      E HAK/AU
      E HAK S/AU
L138 3 S E3
      E HAKSOO/AU
      E HAK NAME/AU
L139 1 S L104 AND L108-L138
L140 5 S L8,L139,L106,L107
L141 5 S L140 AND (BATTERY OR ?ANOD? OR ?CATHOD? OR ?ELECTROLY? OR SOL
L142 25 S L104 NOT L141
L143 2 S L71 AND L141
L144 1 S L71 AND L142
L145 30 S L141-L144

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FILE 'REGISTRY' ENTERED AT 11:46:55 ON 22 JAN 2007

FILE 'HCAPLUS' ENTERED AT 11:46:55 ON 22 JAN 2007

L146 TRA L145 1- RN : 1866 TERMS



FILE 'REGISTRY' ENTERED AT 11:46:56 ON 22 JAN 2007

L147 1866 SEA L146  
L148 24 S L147 AND L66  
L149 15 S L147 AND L68,L69,L78  
L150 15 S L147 AND L72  
L151 11 S L147 AND L71  
L152 21 S L147 AND LI/ELS NOT L149  
L153 24 S L147 AND ?LITHIUM?/CNS NOT L149  
L154 24 S L152,L153

FILE 'HCAPLUS' ENTERED AT 11:50:24 ON 22 JAN 2007

L155 12 S L154 AND L145  
L156 30 S L149 AND L145  
L157 30 S L155,L156  
L158 5 S L157 AND L141  
SEL RN L158 5

FILE 'REGISTRY' ENTERED AT 11:53:29 ON 22 JAN 2007

L159 74 S E1-E74  
L160 73 S L159 NOT L66  
L161 66 S L160 NOT L73,L69,L154  
L162 62 S L161 NOT L72  
L163 61 S L162 NOT L71  
L164 5 S L163 AND S/ELS  
L165 56 S L163 NOT L164  
L166 2 S L165 AND OCOC2/ES  
L167 5 S L165 AND OC4/ES  
L168 2 S L167 AND (C4H4O OR C5H6O)  
L169 3 S L167 NOT L168

FILE 'HCAPLUS' ENTERED AT 11:58:21 ON 22 JAN 2007

L170 150 S L168 AND (L68,L69,L78)  
L171 90 S L170 AND PY<=2003 NOT P/DT  
L172 43 S L170 AND (PD<=20030313 OR PRD<=20030313 OR AD<=20030313) AND  
L173 133 S L171,L172  
L174 73 S L173 AND (L72,L169)  
L175 51 S L174 AND L81-L89,L100-L102  
L176 59 S L173 AND BATTERY  
L177 89 S L175,L176,L157,L158  
L178 5 S L177 AND (SAMSUN? OR CHEIL?)/PA,CS  
L179 1 S L177 AND L108-L138  
L180 5 S L178,L179  
L181 84 S L177 NOT L180  
L182 38 S L181 NOT P/DT  
L183 46 S L181 NOT L182  
L184 46 S L183 AND L66,L168  
L185 46 S L184 AND (L68,L78,L154 OR ?LITHIUM? OR LI)  
L186 38 S L184,L185 AND (L72 OR L169 OR L150)  
L187 8 S L185 NOT L186  
L188 43 S L180,L186

FILE 'REGISTRY' ENTERED AT 12:03:44 ON 22 JAN 2007

=> fil hcaplus

FILE 'HCAPLUS' ENTERED AT 12:05:12 ON 22 JAN 2007

USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.

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FILE COVERS 1907 - 22 Jan 2007 VOL 146 ISS 5  
FILE LAST UPDATED: 21 Jan 2007 (20070121/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l188 bib abs hitstr retable tot

L188 ANSWER 1 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2006:776339 HCAPLUS

DN 145:252320

TI Nonaqueous **electrolyte** solution for secondary **lithium battery**

IN Jun, Jong Ho; Kim, Hak Su; Kim, Jong Seop; Yang, Ho Seok

PA **Cheil Industries Inc., S. Korea**

SO Repub. Korean Kongkae Taeho Kongbo, No pp. given

CODEN: KRXXA7

DT **Patent**

LA Korean

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 2004080155	A	20040918	KR 2003-15029	20030311 <--
PRAI	KR 2003-15029		20030311	<--	

AB A nonaq. **electrolyte** solution for a secondary **lithium battery** is provided, to improve electrochem. reactivity and stability to overcharge, thereby allowing a **battery** pack to be miniaturized by using no protection circuit or protection device. The **electrolyte** solution comprises 100 weight parts organic **solvent** mixture which consists of a cyclic carbonate-based organic **solvent** and a linear carbonate-based organic **solvent** and contains 0.8-2 M Li salt; and 0.1-10.0 weight parts of a halothionaphthene derivative

IT **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate

**108-32-7**, Propylene carbonate **616-38-6**, Dimethyl

carbonate **623-53-0**, Ethyl methyl carbonate **21324-40-3**,

**Lithium** hexafluorophosphate **35363-40-7**, Ethyl propyl

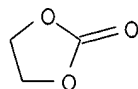
carbonate **56525-42-9**, Methyl propyl carbonate

RL: DEV (Device component use); USES (Uses)

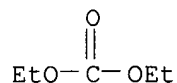
(**electrolyte** solns. containing thionaphthene derivs. for secondary **lithium batteries**)

RN **96-49-1** HCAPLUS

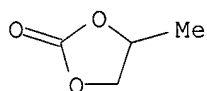
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



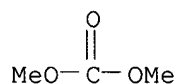
RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



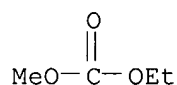
RN 108-32-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



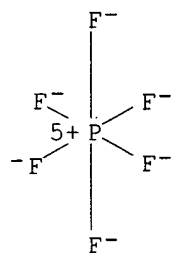
RN 616-38-6 HCAPLUS  
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS  
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)

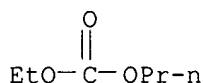


RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

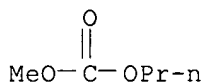


● Li<sup>+</sup>

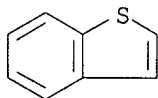
RN 35363-40-7 HCAPLUS  
 CN Carbonic acid, ethyl propyl ester (7CI, 9CI) (CA INDEX NAME)



RN 56525-42-9 HCAPLUS  
 CN Carbonic acid, methyl propyl ester (7CI, 9CI) (CA INDEX NAME)



IT **95-15-8D**, Thionaphthene, halo derivs.  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (electrolyte solns. containing thionaphthene derivs. for  
 secondary lithium batteries)  
 RN 95-15-8 HCAPLUS  
 CN Benzo[b]thiophene (8CI, 9CI) (CA INDEX NAME)



(3)

L188 ANSWER 2 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 2006:745637 HCAPLUS  
 DN 145:296106  
 TI Nonaqueous **electrolyte** solution and secondary **battery**  
 containing the solution  
 IN Kim, Hak Su; Kim, Jong Seop; Park, Myeong Guk; Yang, Ho Seok  
 PA **Cheil Industries Inc., S. Korea**  
 SO Repub. Korean Kongkae Taeho Kongbo, No pp. given  
 CODEN: KRXXA7  
 DT **Patent**  
 LA Korean  
 FAN.CNT 1

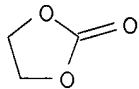
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 2004061572	A	20040707	KR 2002-87845	20021231 <--
PRAI	KR 2002-87845		20021231	<--	

AB A nonaq. **electrolyte** solution and a secondary **battery**  
 containing the **electrolyte** solution are provided to reduce the  
 generation of gas at a high temperature (85°) remarkably, thereby  
 preventing the swelling due to the generation of gas of a **battery**  
 and improving the capacity storage at a high temperature The  
**electrolyte** solution has a Li salt dissolved in a  
 carbonate-based organic **solvent** mixture; and 0.1-10 weight parts of a  
 1-phenylsulfonyl pyrrole derivative or 1-phenylsulfonyl thiophene derivative  
 IT **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate  
**108-32-7**, Propylene carbonate **616-38-6**, Dimethyl  
 carbonate **623-53-0**, Ethyl methyl carbonate **21324-40-3**,  
**Lithium** hexafluorophosphate **56525-42-9**, Methyl propyl  
 carbonate  
 RL: DEV (Device component use); USES (Uses)

(**electrolyte** solns. containing phenylsulfonyl pyrrole derivs. or phenylsulfonyl thiophene derivs. for secondary **batteries**)

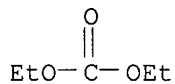
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



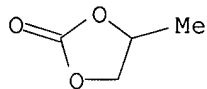
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



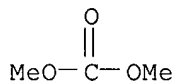
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



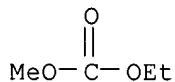
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



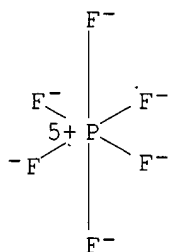
RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



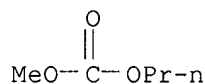
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

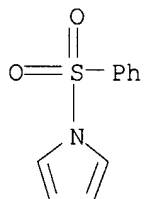


● Li<sup>+</sup>

RN 56525-42-9 HCAPLUS  
CN Carbonic acid, methyl propyl ester (7CI, 9CI) (CA INDEX NAME)



IT 16851-82-4D, 1-Phenylsulfonyl pyrrole, derivs.  
RL: MOA (Modifier or additive use); USES (Uses)  
(electrolyte solns. containing phenylsulfonyl pyrrole derivs. or  
phenylsulfonyl thiophene derivs. for secondary batteries)  
RN 16851-82-4 HCAPLUS  
CN 1H-Pyrrole, 1-(phenylsulfonyl)- (9CI) (CA INDEX NAME)



2

L188 ANSWER 3 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
AN 2004:753254 HCAPLUS  
DN 141:228183  
TI A nonaqueous electrolyte for lithium secondary battery  
IN Kim, Jin-Hee; Kim, Jin-Sung; Hwang, Sang-Moon  
; Paik, Meen-Seon; Kim, Hak-Soo  
PA Samsung SDI Co., Ltd., S. Korea; Cheil Industries Inc.  
SO Eur. Pat. Appl., 33 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 1458048	A1	20040915	EP 2003-90262	20030821 <--

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK

KR 2004080775	A	20040920	KR 2003-15749	20030313 <--
JP 2005108439	A	20050421	JP 2003-183239	20030626 <--
CN 1531134	A	20040922	CN 2003-155332	20030827 <--
US 2004185347	A1	20040923	US 2003-658272	20030910 <--
PRAI KR 2003-15749	A	20030313	<--	

OS MARPAT 141:228183

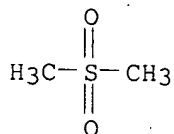
AB An **electrolyte** for a **lithium** secondary **battery** includes **lithium** salts, a nonaq. organic **solvent**, and additive compds. The additive compds. added to the **electrolyte** of the present invention decompose earlier than the organic **solvent** to form a conductive polymer layer on the surface of a pos. electrode, and prevent decomposition of the organic **solvent**. Accordingly, the **electrolyte** inhibits gas generation caused by decomposition of the organic **solvent** at initial charging, and thus reduces an increase of internal pressure and swelling during high temperature storage, and also improves safety of the **battery** during overcharge.

IT 67-71-0, Methylsulfone 71-43-2, Benzene, uses 77-77-0, Vinylsulfone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses 126-33-0, Tetramethylene sulfone 127-63-9, Phenylsulfone 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid, chain ester 616-38-6, Dimethyl carbonate 620-32-6, Benzylsulfone 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses 1889-59-4, Ethylvinylsulfone 3680-02-2, Methylvinylsulfone 4437-85-8, Butylene carbonate 5535-43-3, m-ChloroPhenyl vinyl sulfone 5535-48-8, Phenylvinylsulfone 7439-93-2, **Lithium**, uses 7447-41-8, **Lithium** chloride (LiCl), uses 7791-03-9, **Lithium** perchlorate 10377-51-2, **Lithium** iodide 14024-11-4, Aluminum **lithium** chloride AlLiCl4 14283-07-9, **Lithium** tetrafluoroborate 18424-17-4, **Lithium** hexafluoroantimonate 21324-40-3, **Lithium** hexafluorophosphate 27359-10-0, Trifluorotoluene 28122-14-7, p-FluoroPhenyl vinyl sulfone 28452-93-9, Butadiene sulfone 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** triflate 35363-40-7, Ethyl propyl carbonate 37220-89-6, Aluminum **lithium** oxide 39300-70-4, **Lithium** nickel oxide 56525-42-9, Methyl propyl carbonate 90076-65-6 131651-65-5, **Lithium** nonafluorobutanesulfonate 162684-16-4, **Lithium** manganese nickel oxide

RL: DEV (Device component use); USES (Uses)  
(nonaq. **electrolyte** for **lithium** secondary **battery**)

RN 67-71-0 HCAPLUS

CN Methane, sulfonylbis- (9CI) (CA INDEX NAME)



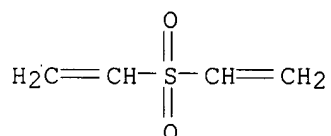
RN 71-43-2 HCAPLUS

CN Benzene (8CI, 9CI) (CA INDEX NAME)



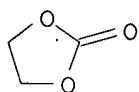
RN 77-77-0 HCAPLUS

CN Ethene, 1,1'-sulfonylbis- (9CI) (CA INDEX NAME)



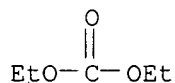
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



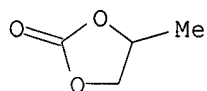
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



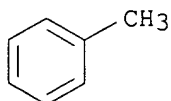
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 108-88-3 HCAPLUS

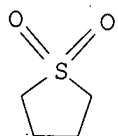
CN Benzene, methyl- (9CI) (CA INDEX NAME)



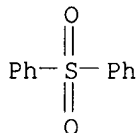
RN 126-33-0 HCAPLUS

CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)

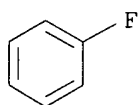




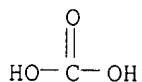
RN 127-63-9 HCAPLUS  
 CN Benzene, 1,1'-sulfonylbis- (9CI) (CA INDEX NAME)



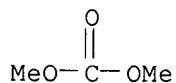
RN 462-06-6 HCAPLUS  
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



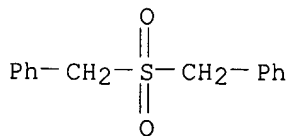
RN 463-79-6 HCAPLUS  
 CN Carbonic acid (7CI, 8CI, 9CI) (CA INDEX NAME)



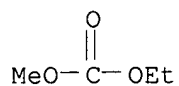
RN 616-38-6 HCAPLUS  
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



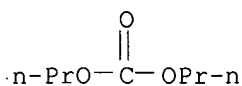
RN 620-32-6 HCAPLUS  
 CN Benzene, 1,1'-[sulfonylbis(methylene)]bis- (9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS  
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-96-1 HCAPLUS  
 CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

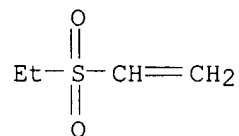


RN 1330-20-7 HCAPLUS  
 CN Benzene, dimethyl- (9CI) (CA INDEX NAME)

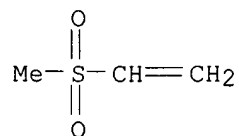


2 ( D1-Me )

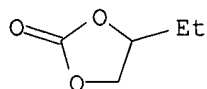
RN 1889-59-4 HCAPLUS  
 CN Ethene, (ethylsulfonyl)- (9CI) (CA INDEX NAME)



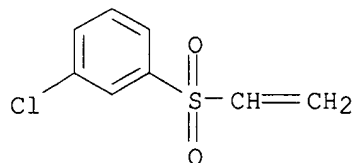
RN 3680-02-2 HCAPLUS  
 CN Ethene, (methylsulfonyl)- (9CI) (CA INDEX NAME)



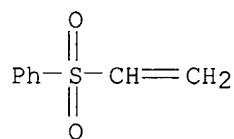
RN 4437-85-8 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



RN 5535-43-3 HCAPLUS  
 CN Benzene, 1-chloro-3-(ethenylsulfonyl)- (9CI) (CA INDEX NAME)



RN 5535-48-8 HCAPLUS  
 CN Benzene, (ethenylsulfonyl)- (9CI) (CA INDEX NAME)



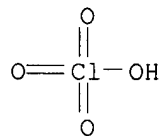
RN 7439-93-2 HCAPLUS  
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 7447-41-8 HCAPLUS  
 CN Lithium chloride (LiCl) (9CI) (CA INDEX NAME)

Cl-Li

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



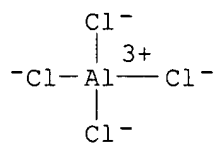
● Li

RN 10377-51-2 HCAPLUS  
 CN Lithium iodide (LiI) (9CI) (CA INDEX NAME)

I-Li

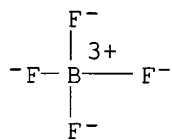
RN 14024-11-4 HCAPLUS

CN Aluminate(1-), tetrachloro-, lithium, (T-4)- (9CI) (CA INDEX NAME)

● Li<sup>+</sup>

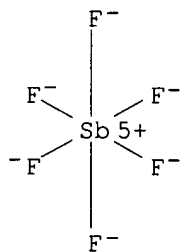
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

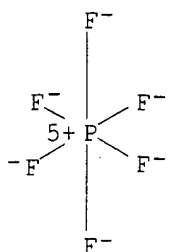
RN 18424-17-4 HCAPLUS

CN Antimonate(1-), hexafluoro-, lithium, (OC-6-11)- (9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

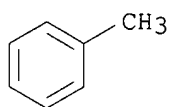
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 27359-10-0 HCAPLUS

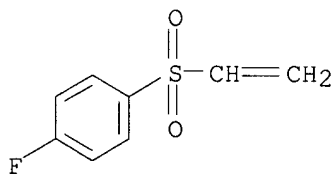
CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 ( D1-F )

RN 28122-14-7 HCAPLUS

CN Benzene, 1-(ethenylsulfonyl)-4-fluoro- (9CI) (CA INDEX NAME)



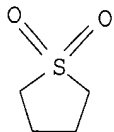
RN 28452-93-9 HCAPLUS

CN Thiophene, dihydro-, 1,1-dioxide (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

CM 1

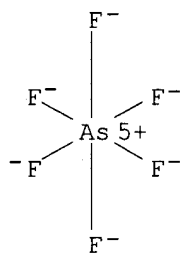
CRN 126-33-0

CMF C4 H8 O2 S



RN 29935-35-1 HCAPLUS

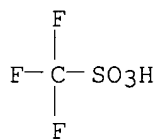
CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

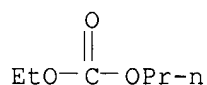
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 35363-40-7 HCAPLUS

CN Carbonic acid, ethyl propyl ester (7CI, 9CI) (CA INDEX NAME)



RN 37220-89-6 HCAPLUS

CN Aluminum lithium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Li	x	7439-93-2
Al	x	7429-90-5

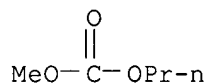
RN 39300-70-4 HCAPLUS

CN Lithium nickel oxide (9CI) (CA INDEX NAME)

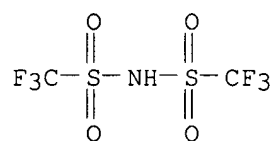
Component	Ratio	Component Registry Number
O	x	17778-80-2

Ni		x		7440-02-0
Li		x		7439-93-2

RN 56525-42-9 HCAPLUS  
 CN Carbonic acid, methyl propyl ester (.7CI, 9CI) (CA INDEX NAME)

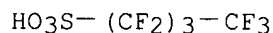


RN 90076-65-6 HCAPLUS  
 CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 131651-65-5 HCAPLUS  
 CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (9CI)  
 (CA INDEX NAME)



● Li

RN 162684-16-4 HCAPLUS  
 CN Lithium manganese nickel oxide (9CI) (CA INDEX NAME)

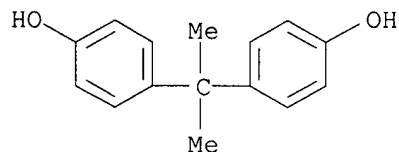
Component	Ratio	Component Registry Number
O	x	17778-80-2
Ni	x	7440-02-0
Mn	x	7439-96-5
Li	x	7439-93-2

IT 80-05-7, Bisphenol A, uses 95-15-8, Thianaphthene  
 117-80-6, 2,3-Dichloro-1,4-naphthoquinone 271-89-6,  
 2,3-Benzofuran 524-42-5, 1,2-Naphthoquinone 625-86-5,  
 2,5-Dimethylfuran 693-98-1, 2-Methylimidazole 1192-62-7  
 , 2-Acetylfuran 1193-79-9, 2-Acetyl-5-methylfuran  
 4265-27-4, 2-Butylbenzofuran 7474-83-1,  
 3-Bromo-1,2-naphthoquinone 13243-65-7, 2,3-Dibromo-1,4-  
 naphthoquinone 16851-82-4, 1-(Phenylsulfonyl)pyrrole  
 RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte for lithium secondary battery)

RN 80-05-7 HCAPLUS

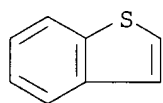
CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



①

RN 95-15-8 HCAPLUS

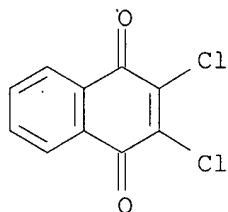
CN Benzo[b]thiophene (8CI, 9CI) (CA INDEX NAME)



③

RN 117-80-6 HCAPLUS

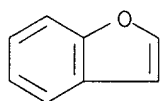
CN 1,4-Naphthalenedione, 2,3-dichloro- (9CI) (CA INDEX NAME)



④

RN 271-89-6 HCAPLUS

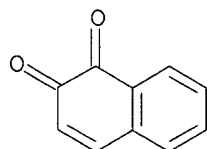
CN Benzofuran (6CI, 8CI, 9CI) (CA INDEX NAME)



③

RN 524-42-5 HCAPLUS

CN 1,2-Naphthalenedione (9CI) (CA INDEX NAME)

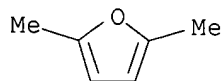


⑤

RN 625-86-5 HCAPLUS



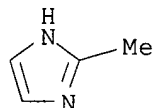
CN Furan, 2,5-dimethyl- (6CI, 8CI, 9CI) (CA INDEX NAME)



(2)

RN 693-98-1 HCAPLUS

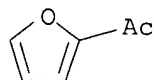
CN 1H-Imidazole, 2-methyl- (9CI) (CA INDEX NAME)



(2)

RN 1192-62-7 HCAPLUS

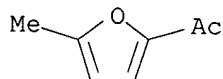
CN Ethanone, 1-(2-furanyl)- (9CI) (CA INDEX NAME)



(2)

RN 1193-79-9 HCAPLUS

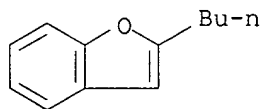
CN Ethanone, 1-(5-methyl-2-furanyl)- (9CI) (CA INDEX NAME)



(2)

RN 4265-27-4 HCAPLUS

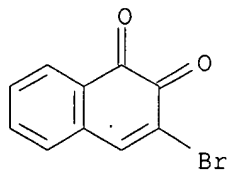
CN Benzofuran, 2-butyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



(3)

RN 7474-83-1 HCAPLUS

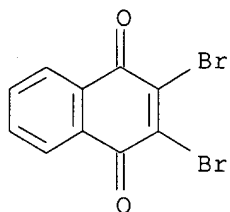
CN 1,2-Naphthalenedione, 3-bromo- (9CI) (CA INDEX NAME)



(5)

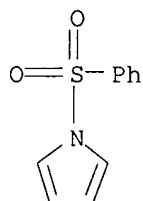
RN 13243-65-7 HCAPLUS

CN 1,4-Naphthalenedione, 2,3-dibromo- (9CI) (CA INDEX NAME)



(4)

RN 16851-82-4 HCAPLUS  
 CN 1H-Pyrrole, 1-(phenylsulfonyl)- (9CI) (CA INDEX NAME)



(2)

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1993	43-44	1	J POWER SOURCES	
Arimura, T	1999	118	1	SOLID STATE IONICS	
Moli Energy 1990 Ltd	1997			EP 0759641 A	HCAPLUS
Moli Energy 1990 Ltd	1997			EP 0776058 A	HCAPLUS
Moller, K	2003	119-1	561	JOURNAL OF POWER SOU	HCAPLUS
Naess, R	2000			US 6074777 A	HCAPLUS
Ube Industries	2003			EP 1335445 A	HCAPLUS
Ube Industries	2003			EP 1361622 A	HCAPLUS
Wang, C	1998	74	142	JOURNAL OF POWER SOU	HCAPLUS
Yoshiharu, M	1989	26	579	JOURNAL OF POWER SOU	

L188 ANSWER 4 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:392771 HCAPLUS

DN 140:378118

TI Electrolyte composition for **lithium** secondary battery having  
 high overcharge-safety

IN Roh, Kwonsun; Choi, Jonghyuk; Lee, Jaemyoung; Lee, Jonha

PA SKC Limited, S. Korea

SO PCT Int. Appl., 15 pp.

CODEN: PIXXD2

DT **Patent**

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2004040687	A1	20040513	WO 2003-KR2274	20031027 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN,				

TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,  
 KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,  
 FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,  
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

KR 2004037534 A 20040507 KR 2002-66067 20021029 <--

AU 2003272137 A1 20040525 AU 2003-272137 20031027 <--

PRAI KR 2002-66067 A 20021029 <--

WO 2003-KR2274 W 20031027

AB An electrolyte composition comprising a nitrogen-containing compound,  
 cyclohexyl

benzene, an organic solvent and a **lithium** salt is advantageously  
 used for the preparation of a **lithium** secondary battery having high  
 overcharge-safety, cycling life and high-temperature swelling properties at the  
 same time.

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

288-47-1, Thiazole 616-38-6, Dimethyl carbonate

7439-93-2D, Lithium, salt 7791-03-9,

Lithium perchlorate 12190-79-3, Cobalt lithium

oxide colio2 14283-07-9, Lithium tetrafluoroborate

18424-17-4, Lithium hexafluoroantimonate

21324-40-3, Lithium hexafluorophosphate

29935-35-1, Lithium hexafluoroarsenate

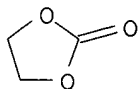
33454-82-9, Lithium triflate 90076-65-6

RL: DEV (Device component use); USES (Uses)

(electrolyte composition for **lithium** secondary battery having high  
 overcharge-safety)

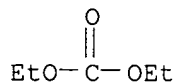
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 288-47-1 HCAPLUS

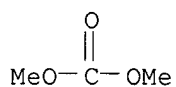
CN Thiazole (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)

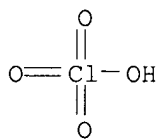
(6)



RN 7439-93-2 HCAPLUS  
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

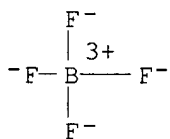


● Li

RN 12190-79-3 HCAPLUS  
CN Cobalt lithium oxide (CoLiO<sub>2</sub>) (9CI) (CA INDEX NAME)

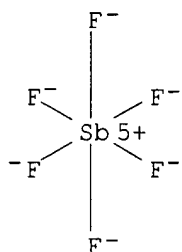
Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	1	7440-48-4
Li	1	7439-93-2

RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



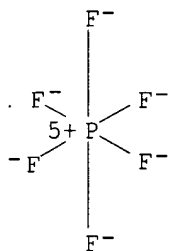
● Li<sup>+</sup>

RN 18424-17-4 HCAPLUS  
CN Antimonate(1-), hexafluoro-, lithium, (OC-6-11)- (9CI) (CA INDEX NAME)

● Li<sup>+</sup>

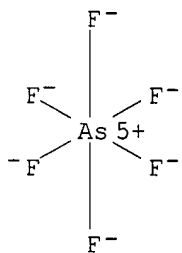
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

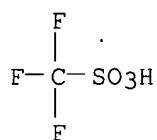
RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

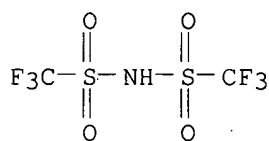
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
lithium salt (9CI) (CA INDEX NAME)

● Li

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Gs-Melcotec Co Ltd	2002			JP 14-313415 A	
Hitachi Maxell Ltd	2002			JP 14-56892 A	
Matsushita Electric Ind	2002			JP 14-117895 A	
Matsushita Electric Ind	1975			US 3872358 A	HCAPLUS
Samsung Sdi Co Ltd	2002			US 6395429 A	HCAPLUS
Skc Co Ltd	2002			KR 0262152 A	
Ube Ind Ltd	2002			JP 14-203594 A	
Ube Ind Ltd	2002			JP 14-260725 A	

L188 ANSWER 5 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2004:201026 HCAPLUS

DN 140:220743

TI Nonaqueous electrolytes and nonaqueous electrolyte secondary  
**batteries** with prevented overcharging

IN Awano, Hiroki

PA Toyota Motor Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004079436	A	20040311	JP 2002-241047	20020821 <--
PRAI	JP 2002-241047		20020821	<--	

AB The title nonaq. electrolyte gels comprise a polymer containing dispersions of  
nonaq. solvent solution of monomers of conductive polymers, which polymerize  
above certain voltage. The monomers may be ≥1 compd(s). selected

from benzenes, biphenyls, pyrroles, furans, indoles, and thiophenes. Secondary **batteries** comprising **Li**-intercalating electrodes and the said electrolytes are also claimed. The monomers start to polymerize under application of certain voltage to the **battery**

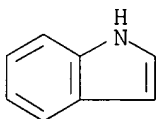
IT 71-43-2D, Benzene, derivs. 110-00-9D, Furan, derivs.  
 120-72-9D, Indole, derivs. 7439-93-2D, **Lithium**  
 , poly(ethylene oxide) or poly(vinylidene fluoride) complexes,  
 hexafluorophosphate-containing 21324-40-3D, **Lithium**  
 hexafluorophosphate, poly(ethylene oxide) or poly(vinylidene fluoride)  
 complexes  
 RL: DEV (Device component use); USES (Uses)  
 (addition of monomers polymerizable under certain voltage for safety in  
 overcharging of secondary **lithium batteries**)  
 RN 71-43-2 HCAPLUS  
 CN Benzene (8CI, 9CI) (CA INDEX NAME)



RN 110-00-9 HCAPLUS  
 CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



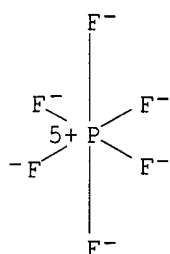
RN 120-72-9 HCAPLUS  
 CN 1H-Indole (9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

L188 ANSWER 6 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 2004:41827 HCAPLUS  
 DN 140:79851  
 TI Electrolyte composition for **lithium** secondary battery having  
 high overcharge-safety  
 IN Park, Chi-Kyun; Zhang, Zhiwei; Chai, Chul; Lee, Jonha; Roh, Kwonsun  
 PA SKC Limited, S. Korea  
 SO PCT Int. Appl., 18 pp.  
 CODEN: PIXXD2  
 DT **Patent**  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004006378	A1	20040115	WO 2003-KR1332	20030707 <--
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,				
	CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,				
	GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS,				
	LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG,				
	PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,				
	TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW:				
	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,				
	KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,				
	FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR,				
	BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	KR 2004006057	A	20040124	KR 2002-39570	20020709 <--
	AU 2003281410	A1	20040123	AU 2003-281410	20030707 <--
PRAI	KR 2002-39570	A	20020709	<--	
	WO 2003-KR1332	W	20030707		

AB An electrolyte composition comprising a nitrogen-containing compound,  
 biphenyl, an

organic solvent and a **lithium** salt is advantageously used for the  
 preparation of a **lithium** secondary battery having high  
 overcharge-safety, cycling life and capacity properties.

IT **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate  
**288-47-1**, Thiazole **616-38-6**, Dimethyl carbonate  
**7439-93-2D**, **Lithium**, salt **7791-03-9**,  
**Lithium** perchlorate **12190-79-3**, Cobalt **lithium**  
 oxide colio2 **14283-07-9**, **Lithium** tetrafluoroborate  
**18424-17-4**, **Lithium** hexafluoroantimonate  
**21324-40-3**, **Lithium** hexafluorophosphate  
**29935-35-1**, **Lithium** hexafluoroarsenate



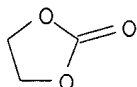
**33454-82-9, Lithium triflate 90076-65-6**

RL: DEV (Device component use); USES (Uses)

(electrolyte composition for **lithium** secondary battery having high overcharge-safety)

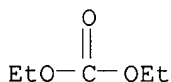
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 288-47-1 HCAPLUS

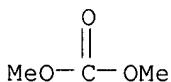
CN Thiazole (6CI, 8CI, 9CI) (CA INDEX NAME)



(6)

RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



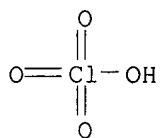
RN 7439-93-2 HCAPLUS

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

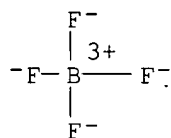


● Li

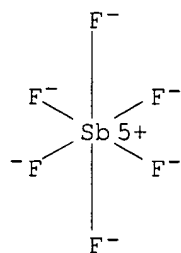
RN 12190-79-3 HCAPLUS  
 CN Cobalt lithium oxide (CoLiO<sub>2</sub>) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	2	17778-80-2
Co	1	7440-48-4
Li	1	7439-93-2

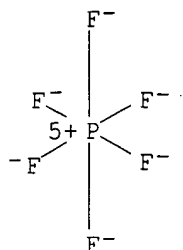
RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 18424-17-4 HCAPLUS  
 CN Antimonate(1-), hexafluoro-, lithium, (OC-6-11)- (9CI) (CA INDEX NAME)

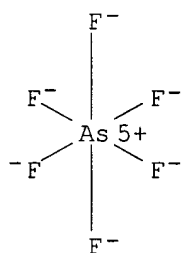
● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

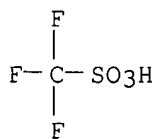
RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

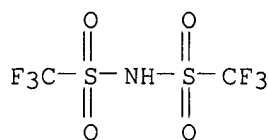
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
International Business	1991			US 5021129 A	HCAPLUS
International Business	1991			US 5045159 A	HCAPLUS
International Business	1992			US 5104944 A	HCAPLUS
International Business	1993			US 5203955 A	HCAPLUS
International Business	1993			US 5242713 A	HCAPLUS
International Business	1995			US 5443865 A	
Skc Co Ltd	2002			EP 1225649 A	HCAPLUS
Sumitomo Chemical Compa	1994			US 5281327 A	HCAPLUS

L188 ANSWER 7 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2003:633136 HCAPLUS

DN 139:152388

TI Nonaqueous **electrolyte** compositions for **lithium**  
secondary **batteries**

IN Song, Eui-hwan; Jung, Won-il; Hwang, Duck-chul

PA **Samsung Sdi Co., Ltd., S. Korea**SO U.S. Pat. Appl. Publ., 5 pp., Cont.-in-part of U.S. Ser. No. 565,158,  
abandoned.

CODEN: USXXCO

DT **Patent**

LA English

FAN.CNT 1

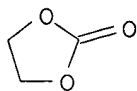
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003152840	A1	20030814	US 2002-278354	20021022 <--
	US 7150944	B2	20061219		
PRAI	US 2000-565158	B2	20000503	<--	

AB Disclosed are nonaq. **electrolyte** compns. of the present invention that comprise nonaq. **solvents** and monomers such as aniline, phenanthrene, ethylenedioxythiophene, benzothiophene or derivs. thereof. The monomers are contained in the **electrolytes** of the present invention in the amts. of less than about 5.0 weight% of the nonaq. **solvent**. In the present invention, cyclic carbonates, linear carbonates or mixts. thereof can be used as the nonaq. **solvents**. The **electrolyte** compns. of the present invention improve the safety characteristics of the cell by preventing the flow of large currents resulting from overcharge or feed-through, and also improve cell life characteristic by helping the reversible transfer of **lithium** ions.

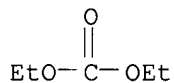
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 623-53-0, Ethyl methyl carbonate 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium

hexafluoroarsenate 33454-82-9, Lithium triflate  
 210353-06-3, Cobalt lithium nickel strontium oxide  
 RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte compns. for lithium secondary  
 batteries)

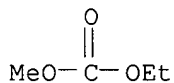
RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



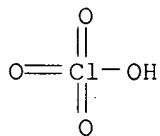
RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS  
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)

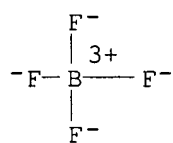


RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



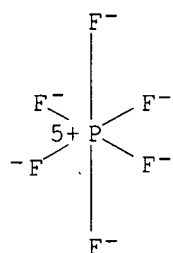
● Li

RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

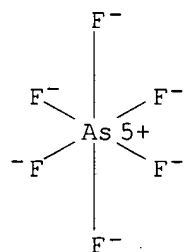
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

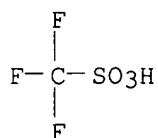
RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 210353-06-3 HCAPLUS

CN Cobalt lithium nickel strontium oxide (9CI) (CA INDEX NAME)

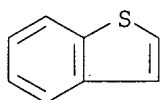
Component	Ratio	Component Registry Number
O	x	17778-80-2
Co	x	7440-48-4
Sr	x	7440-24-6
Ni	x	7440-02-0
Li	x	7439-93-2

IT 95-15-8, Benzothiophene

RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. **electrolyte** compns. for **lithium** secondary  
**batteries**)

RN 95-15-8 HCAPLUS

CN Benzo[b]thiophene (8CI, 9CI) (CA INDEX NAME)



③

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1986			JP 61161673	HCAPLUS
Anon	1995			JP 07220757	HCAPLUS
Anon	1995			JP 07320778	HCAPLUS
Anon	1996			EP 759641	HCAPLUS
Anon	1997			EP 776058	HCAPLUS
Anon	1998			JP 10189008	HCAPLUS
Anon	1998			EP 878861	HCAPLUS
Anon	2000			JP 2000090970	HCAPLUS
Hwang	2003			US 6521375 B1	HCAPLUS
Hwang	2003			US 6613480 B1	HCAPLUS
Jung	2003			US 6511769 B1	HCAPLUS
Lee	1996			US 5538812 A	HCAPLUS
Linden, D	1995	2	36.1	Handbok of Batteries	
Mao	2000			US 6074776 A	HCAPLUS
Matsufuji	1998			US 5759714 A	HCAPLUS
Song	2003			US 20030152840 A1	HCAPLUS
Song	2003			US 6503663 B1	HCAPLUS
Takei	2002			US 6337155 B1	HCAPLUS

Tsutsumi | 1998 | | US 5731106 A | HCAPLUS

L188 ANSWER 8 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:886243 HCAPLUS

DN 137:387083

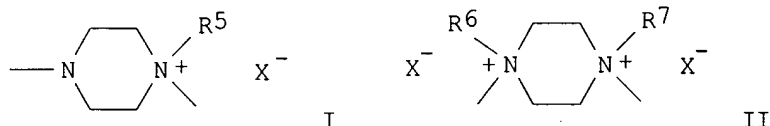
TI Nonaqueous gel composition containing crosslinked polymer having  
alkylammonium or piperazinium structure and electrochemical cell  
IN Aizawa, Wakana; Ikegami, Koshiro; Takada, Masakazu; Takaoka, Kazuchiyo  
PA Mitsubishi Paper Mills, Ltd., Japan; Nippon Unicar Co., Ltd.  
SO Jpn. Kokai Tokkyo Koho, 9 pp.  
CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002332417	A	20021122	JP 2001-138273	20010509 <--
PRAI	JP 2001-138273		20010509	<--	
GI					



AB The title gel composition comprises a polymer having a crosslinked structure R1NX, R2NYNX2, R4NYNX, I, or II [R1-R7 = (substituted) C1-9 alkyl; X = monovalent inorg. or organic acid or its equivalent; Y = C1-8 alkylene, alkylene

oxide, or xylylene]. The composition, especially suitable for secondary Li batteries and capacitors, has high resistance to free acids generated in an electrolyte solution

IT **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate **108-32-7**, Propylene carbonate **21324-40-3**, **Lithium** hexafluorophosphate

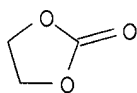
RL: DEV (Device component use); USES (Uses)

(composition containing; nonaq. gel electrolyte composition containing crosslinked

polymer having alkylammonium or piperazinium structure for battery and capacitor)

RN 96-49-1 HCAPLUS

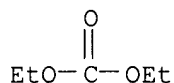
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



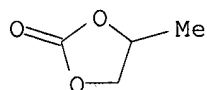
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)

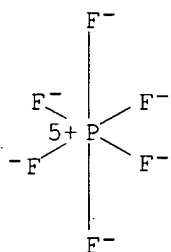




RN 108-32-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

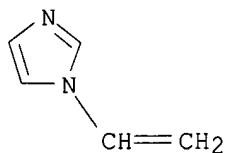


RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

IT **1072-63-5DP**, N-Vinylimidazole, polymers with alkylammonium compound and piperazinium compound  
 RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)  
 (nonaq. gel electrolyte composition containing crosslinked polymer having alkylammonium or piperazinium structure for battery and capacitor)  
 RN 1072-63-5 HCAPLUS  
 CN 1H-Imidazole, 1-ethenyl- (9CI) (CA INDEX NAME)



(6)

L188 ANSWER 9 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 2002:736752 HCAPLUS  
 DN 137:265678  
 TI High ionic conductivity gel polymer electrolyte for rechargeable polymer batteries  
 IN Park, Chi-Kyun; Zhang, Zhiwei; Sun, Lu Ying; Chai, Chul

PA SKC Co., Ltd., USA  
 SO U.S. Pat. Appl. Publ., 9 pp., Cont.-in-part of U.S. Ser. No. 760,720.  
 CODEN: USXXCO

DT **Patent**  
 LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002136959	A1	20020926	US 2001-986459	20011108 <--
	US 6841303	B2	20050111		
	US 2002136958	A1	20020926	US 2001-760720	20010117 <--
	EP 1225649	A2	20020724	EP 2001-310592	20011219 <--
	EP 1225649	A3	20020807		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	KR 2002062152	A	20020725	KR 2002-421	20020104 <--
	CN 1367201	A	20020904	CN 2002-101700	20020117 <--
PRAI	US 2001-760720	A2	20010117	<--	
	US 2001-986459	A	20011108	<--	

AB Ionic gel polymer electrolytes for rechargeable polymer batteries are disclosed. In preferred forms, a gel polymer precursor electrolyte is formed by dissolving a gelling agent into organic liquid electrolytes, and then gelling the precursor in situ at elevated temperature after pouring it into a battery case that contains a cathode, an anode and a separator. The gel polymer electrolytes exhibit excellent ionic conductivity of up to about 10-2 S/cm and voltage stability for **lithium** rechargeable batteries. Most preferably, the gel polymer electrolyte is the reaction product of (A) nitrogen-group containing polymers, copolymers, oligomers or monomers that are capable of reacting with halogen compds. or epoxy compds., such as, polymers, copolymers, oligomers or monomers containing primary, secondary or tertiary amines, and (B) halide or epoxy-group containing polymers, copolymers, oligomers or monomers that are capable of reacting with nitrogen-containing compds., such as polymers, copolymers, oligomers or monomers containing alkylene halides or halomethyl group substituted aromatic units or at least one epoxy unit. Especially preferred (A) materials include pyridine compds., and most preferably vinylpyridines, such as poly(2-vinylpyridine) and copolymers thereof. Especially preferred compds. useable as material (B) include bis(bromomethyl)benzene,  $\alpha,\alpha'$ -dibromoxylene, diiodoalkanes, 3,4-epoxycyclohexylmethyl-3',4'-epoxycyclohexanecarboxylate, butadiene diepoxide, and butanediol diglycidyl ether.

IT 71-43-2D, Benzene, halomethyl derivs., polymers 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 288-47-1, Thiazole 616-38-6, Dimethyl carbonate 7791-03-9, **Lithium** perchlorate 14283-07-9, **Lithium** tetrafluoroborate 21324-40-3, **Lithium** hexafluorophosphate 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** triflate 90076-65-6

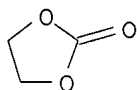
RL: DEV (Device component use); USES (Uses)  
 (high ionic conductivity gel polymer electrolyte for rechargeable polymer batteries)

RN 71-43-2 HCAPLUS

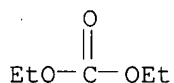
CN Benzene (8CI, 9CI) (CA INDEX NAME)



RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 105-58-8 HCAPLUS  
CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)

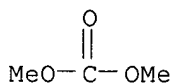


RN 288-47-1 HCAPLUS  
CN Thiazole (6CI, 8CI, 9CI) (CA INDEX NAME)

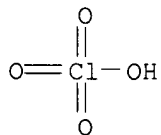


6

RN 616-38-6 HCAPLUS  
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME).

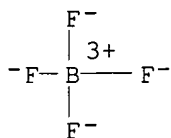


RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



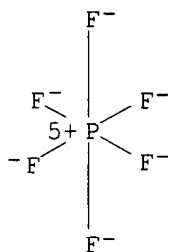
● Li

RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



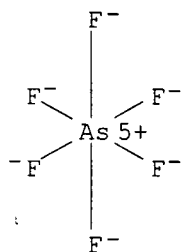
●  $\text{Li}^+$

RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



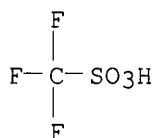
●  $\text{Li}^+$

RN 29935-35-1 HCAPLUS  
CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



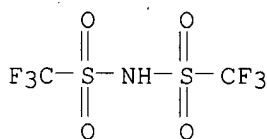
●  $\text{Li}^+$

RN 33454-82-9 HCAPLUS  
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
lithium salt (9CI) (CA INDEX NAME)

● Li

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Abrahamand	1990	137	1657	J. Electrochem. Soc	
Andrieu	1993			US 5202009 A	HCAPLUS
Andrieu	1995	40	2295	Electrochimica Acta	HCAPLUS
Anon	1999			WO 9965101	HCAPLUS
Arbizzani	1994	72	115	Solid State Ionics	HCAPLUS
Armand	2000			US 6120696 A	HCAPLUS
Gozdz	1994			US 5296318 A	HCAPLUS
Hamrock	2000			US 6063522 A	HCAPLUS
Kluger	1983			US 4383103 A	HCAPLUS
Maruyama	2002			US 6420072 B1	HCAPLUS
Passerini	1944	141	L80	J. Electrochem. Soc.	
Tobishima	1993			US 5270134 A	HCAPLUS

L188 ANSWER 10 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:714433 HCAPLUS

DN 137:250260

TI Secondary nonaqueous electrolyte **battery**IN Kuranaka, Satoshi; Bito, Yasuhiko; Kouduki, Kiyomi; Takahashi, Shozo; Eda,  
Nobuo

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002270223	A	20020920	JP 2001-63065	20010307 <--

PRAI JP 2001-63065

20010307 &lt;--

AB The **battery** has a nonaq. electrolyte solution containing an aromatic additive selected from biphenyl, furan, thiophene, and their derivs.; and a porous polyolefin separator, which has a gas permeability 250-800 s/100 mL (JIS P8117-1998), after holding in a 110° atmospheric for 15 min while stretched at 25 kg/cm2 in its length direction, or after holding in a 130° atmospheric for 15 min while stretched at 25 kg/cm2 in its width direction.

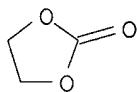
IT 96-49-1, Ethylene carbonate 110-00-9, Furan  
120-72-9, Indole, uses 623-53-0, Ethyl methyl carbonate  
21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolyte solns. containing aromatic additives for secondary  
lithium batteries)

RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



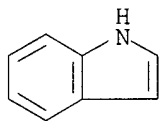
RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



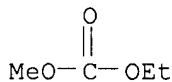
RN 120-72-9 HCAPLUS

CN 1H-Indole (9CI) (CA INDEX NAME)



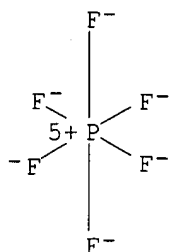
RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

L188 ANSWER 11 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:505274 HCAPLUS

DN 137:81358

TI Ethylene carbonate- $\gamma$ -butyrolactone-based nonaqueous electrolytes for secondary **batteries**

IN Sekino, Masahiro; Satoh, Asako; Fujiwara, Masashi; Hasebe, Hiroyuki

PA Kabushiki Kaisha Toshiba, Japan

SO U.S. Pat. Appl. Publ., 25 pp., Cont.-in-part of U. S. Ser. No.961,138.

CODEN: USXXCO

DT **Patent**

LA English

FAN.CNT 2

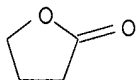
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2002086216	A1	20020704	US 2001-26816	20011227 <--
	US 6861175	B2	20050301		
	US 2002064712	A1	20020530	US 2001-961138	20010924 <--
	<u>US 6787269</u>	B2	20040907		
	JP 2002184462	A	20020628	JP 2001-338586	20010928 <--
PRAI	JP 2000-296074	A	20000928	<--	
	US 2001-961138	A2	20010924	<--	
	JP 2001-338586	A	20010928	<--	

AB A nonaq. electrolyte, preferably in the form of a gel or liquid, for a secondary **battery** consists of 20-50 volume% ethylene carbonate and 40-80 volume%  $\gamma$ -butyrolactone, and includes a third solvent selected from ethylene sulfite, phenylethylene carbonate, 2-methylfuran, furan, thiophene, catechol carbonate, and vinyl ethylene carbonate. Optionally, the **battery** electrolyte can also contain a **lithium** salt as a solute, selected from LiClO<sub>4</sub>, LiPF<sub>6</sub>, LiBF<sub>4</sub>, LiAsF<sub>6</sub>, LiCF<sub>3</sub>SO<sub>3</sub>, LiN(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>, and LiN(C<sub>2</sub>F<sub>5</sub>SO<sub>2</sub>)<sub>2</sub>. Under charge-discharge cycle tests at 45°, the capacity retention rate at the 100th charge-discharge cycle is  $\geq 85\%$  of the discharge capacity in the first charge-discharge cycle.

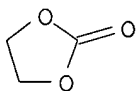
IT **96-48-0**,  $\gamma$ -Butyrolactone **96-49-1**, Ethylene carbonate **110-00-9**, Furan **534-22-5**, 2-Methylfuran  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (electrolytes containing; ethylene carbonate- $\gamma$ -butyrolactone-based nonaq. electrolytes for secondary **batteries**)

RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



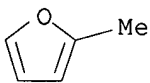
RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



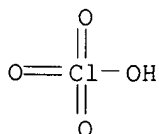
RN 110-00-9 HCAPLUS  
CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 534-22-5 HCAPLUS  
CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)



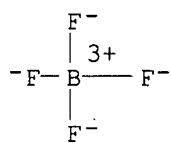
IT 7791-03-9, Lithium perchlorate 14283-07-9,  
Lithium tetrafluoroborate 21324-40-3, Lithium  
hexafluorophosphate 29935-35-1, Lithium  
hexafluoroarsenate 33454-82-9, Lithium  
trifluoromethanesulfonate 90076-65-6, Methanesulfonamide,  
1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt  
RL: TEM (Technical or engineered material use); USES (Uses)  
(solute, nonaq. electrolyte containing; ethylene carbonate-γ-  
butyrolactone-based nonaq. electrolytes for secondary batteries  
)  
RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

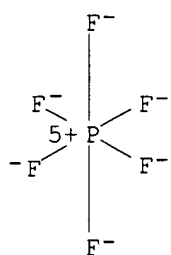
RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

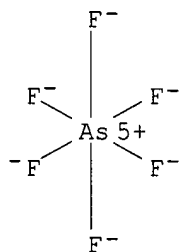
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

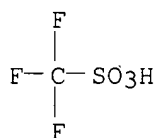
RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

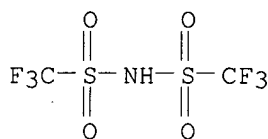
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
lithium salt (9CI) (CA INDEX NAME)

● Li

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	1990			EP 0398689	HCAPLUS
Anon	1992			EP 0478379	HCAPLUS
Anon	1992			JP 414769	
Anon	1999			JP 1197062	
Anon	2000			WO 0079632	HCAPLUS
Anon	2000			EP 0997960	HCAPLUS
Anon	2000			EP 1030399	HCAPLUS
Anon	2000			JP 2000235868	HCAPLUS
Anon	2001			EP 1096592	HCAPLUS
Anon	2001			JP 2001126761 A	HCAPLUS
Anon	2002			EP 1187245	HCAPLUS
Hatazaki	2001			US 20010038949 A1	
Iwamoto	2002			US 20020039677 A1	
Mita	2001			US 6315918 B1	HCAPLUS
Nakagawa, H	2000		1	The Electrochemical	MEDLINE
Smart, M	1999		55	Battery Conference o	HCAPLUS
Sonozaki	2000			US 6048639 A	HCAPLUS

L188 ANSWER 12 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:253130 HCAPLUS

DN 136:281940

TI Nonaqueous electrolyte secondary **battery**

IN Sekino, Masahiro; Satoh, Asako; Fujiwara, Masashi; Hasebe, Hiroyuki

PA Kabushiki Kaisha Toshiba, Japan

SO Eur. Pat. Appl., 33 pp.

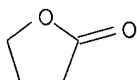
CODEN: EPXXDW

DT **Patent**

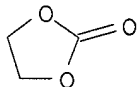
LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1193788	A2	20020403	EP 2001-308138	20010925 <--
	EP 1193788	A3	20040107		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	CN 1347166	A	20020501	CN 2001-132663	20010907 <--
PRAI	JP 2000-296074	A	20000928	<--	
AB	Disclosed is a nonaq. electrolyte secondary <b>battery</b> , characterized by comprising a nonaq. electrolyte containing ethylene carbonate and $\gamma$ -butyrolactone, wherein, when a charge-discharge cycle test satisfying conditions (A) to (D) given below is performed under an environment of 45°, the capacity retention rate at 100-th charge-discharge cycle is at least 85% based on the discharge capacity in the first charge-discharge cycle, (A) for the charging, the constant current-constant voltage charging to 4.2 V is performed for 3 h under a current of 1 C, (B) the discharging is performed to 3 V under a current of 1 C, (C) after the charging, the secondary <b>battery</b> is left to stand for 10 min, followed by performing the discharging, and (D) after the discharging, the secondary <b>battery</b> is left to stand for 10 min, followed by performing the charging.				
IT	96-48-0, $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 110-00-9, Furan 534-22-5, 2-Methylfuran 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 RL: DEV (Device component use); USES (Uses) (nonaq. electrolyte secondary <b>battery</b> )				
RN	96-48-0 HCAPLUS				
CN	2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)				



RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

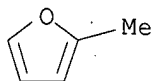


RN 110-00-9 HCAPLUS  
CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



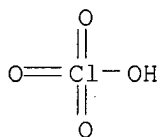
RN 534-22-5 HCAPLUS  
CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)

②



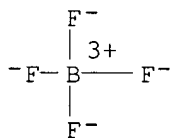
②

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

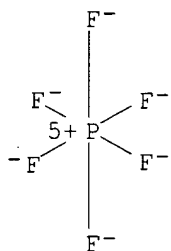


● Li

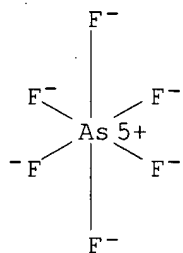
RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

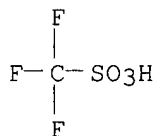
RN 29935-35-1 HCAPLUS  
 CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

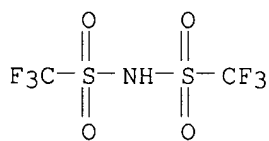
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

L188 ANSWER 13 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:193254 HCAPLUS

DN 136:234657

TI Manufacture of electrode by heat treatment for secondary polymer battery

IN Harada, Manabu; Nishiyama, Toshihiko; Kamito, Hiroyuki; Kurosaki, Masato; Nakagawa, Yuji; Mitani, Katsuya; Yoshida, Shinya; Shinoda, Tomoki

PA NEC Corp., Japan; NEC Tokin Corp.

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002075333	A	20020315	JP 2000-267388	20000904 <--
	JP 3581304	B2	20041027		
PRAI	JP 2000-267388		20000904	<--	

AB The electrode is manufactured by forming a film containing a conductive aid and polymer active mass and then heating at temperature lower than carbonization temperature of the polymer. The electrode may be free from a binder. Claimed battery is equipped with the above electrode through a separator impregnated with an electrolyte solution or an electrolyte. The battery has high capacity, long cycle life, and low impedance.

IT 82451-55-6, Polyindole

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)  
(cathode; polymer-containing electrode manufactured by heat treatment for secondary polymer battery)

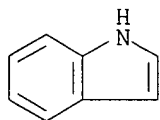
RN 82451-55-6 HCAPLUS

CN 1H-Indole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 120-72-9

CMF C8 H7 N



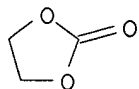
③

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate

RL: DEV (Device component use); USES (Uses)  
(electrolyte solvent; polymer-containing electrode manufactured by heat treatment for secondary polymer battery)

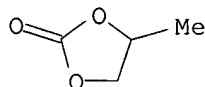
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

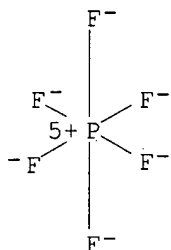


IT 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)  
(electrolyte; polymer-containing electrode manufactured by heat treatment

for

secondary polymer battery)  
 RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

L188 ANSWER 14 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:163800 HCAPLUS

DN 136:219519

TI Phenyl boron-based compounds as anion receptors for nonaqueous  
**battery** electrolytes

IN Lee, Hung Sui; Yang, Xiao-qing; McBreen, James; Sun, Xuehui

PA Brookhaven Science Associates, Llc, USA

SO U.S., 15 pp., Cont.-in-part of U. S. 6,022,643.

CODEN: USXXAM

DT **Patent**

LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6352798	B1	20020305	US 2000-492569	20000127 <--
	US 6022643	A	20000208	US 1997-986846	19971208 <--
PRAI	US 1997-986846	A2	19971208	<--	

OS MARPAT 136:219519

AB Novel fluorinated boronate-based compds. which act as anion receptors in  
 nonaq. **battery** electrolytes are provided. When added to nonaq.  
**battery** electrolytes, the fluorinated boronate-based compds. of  
 the invention enhance ionic conductivity and cation transference number of  
 nonaq.

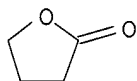
electrolytes. The fluorinated boronate-based anion receptors include  
 different fluorinated alkyl and aryl groups.

IT **96-48-0**,  $\gamma$ -Butyrolactone **96-49-1**, Ethylene  
 carbonate **108-32-7**, Propylene carbonate **109-99-9**, Thf,  
 uses **534-22-5**, 2-Methylfuran **616-38-6**, Dimethyl  
 carbonate **7439-93-2**, **Lithium**, uses **7447-41-8**  
 , **Lithium** chloride, uses **7550-35-8**, **Lithium**  
 bromide **7791-03-9**, **Lithium** perchlorate  
**10377-51-2**, **Lithium** iodide **12057-17-9**,  
**Lithium** manganese oxide  $\text{limn}_2\text{o}_4$  **12190-79-3**, Cobalt  
**lithium** oxide  $\text{colio}_2$  **14283-07-9**, **Lithium**  
 tetrafluoroborate **18424-17-4**, **Lithium**  
 hexafluoroantimonate **21324-40-3**, **Lithium**  
 hexafluorophosphate **29935-35-1**, **Lithium**  
 hexafluoroarsenate

RL: DEV (Device component use); USES (Uses)  
(Ph boron-based compds. as anion receptors for nonaq. **battery**  
electrolytes)

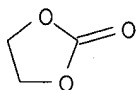
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



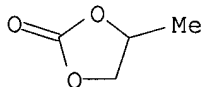
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



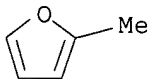
RN 109-99-9 HCAPLUS

CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 534-22-5 HCAPLUS

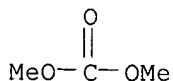
CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)



(2)

RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)



Li

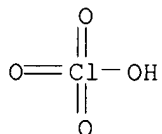
RN 7447-41-8 HCAPLUS  
 CN Lithium chloride (LiCl) (9CI) (CA INDEX NAME)

Cl-Li

RN 7550-35-8 HCAPLUS  
 CN Lithium bromide (LiBr) (9CI) (CA INDEX NAME)

Br-Li

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 10377-51-2 HCAPLUS  
 CN Lithium iodide (LiI) (9CI) (CA INDEX NAME)

I-Li

RN 12057-17-9 HCAPLUS  
 CN Lithium manganese oxide (LiMn2O4) (6CI, 7CI, 9CI) (CA INDEX NAME)

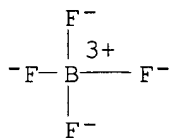
Component	Ratio	Component Registry Number
O	4	17778-80-2
Mn	2	7439-96-5
Li	1	7439-93-2

RN 12190-79-3 HCAPLUS  
 CN Cobalt lithium oxide (CoLiO2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	1	7440-48-4
Li	1	7439-93-2

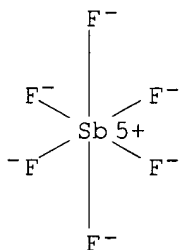
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

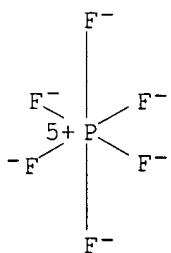
RN 18424-17-4 HCAPLUS

CN Antimonate(1-), hexafluoro-, lithium, (OC-6-11)- (9CI) (CA INDEX NAME)

● Li<sup>+</sup>

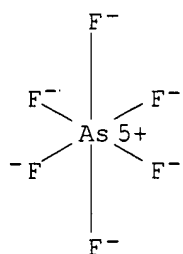
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1991			DE 4014488 A	HCAPLUS
Anon	1993			JP 05148259 A	HCAPLUS
Conroy	1970	9	2739	"A Series of 1,3-Dio	

L188 ANSWER 15 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2002:103441 HCAPLUS

DN 136:153869

TI **Lithium-sulfur batteries** with high capacity and good rate capability

IN Jung, Yongju; Kim, Seok; Choi, Yunsuk; Choi, Soo Seok; Lee, Jeawoan; Hwang, Duck Chul; Kim, Joo Soak

PA **Samsung SDI Co., Ltd., S. Korea**

SO Eur. Pat. Appl., 10 pp.

CODEN: EPXXDW

DT **Patent**

LA English

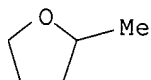
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1178555	A2	20020206	EP 2001-117788	20010802 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	KR 2002011562	A	20020209	KR 2000-44900	20000802 <--
	KR 2002011563	A	20020209	KR 2000-44901	20000802 <--
	JP 2002075446	A	20020315	JP 2001-213286	20010713 <--
	US 2002045102	A1	20020418	US 2001-918463	20010801 <--
	CN 1336696	A	20020220	CN 2001-132527	20010802 <--
PRAI	KR 2000-44900	A	20000802	<--	
	KR 2000-44901	A	20000802	<--	

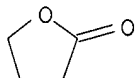
AB A **lithium-sulfur battery** includes a neg. electrode, a pos. electrode, and an **electrolyte**. The neg. electrode includes a neg. active material selected from materials in which **lithium** intercalation reversibly occur, **lithium** alloy or **lithium** metal. The pos. electrode includes at least one of elemental sulfur and organosulfur compds. for a pos. active material, and an elec. conductive material. The **electrolyte** includes at least two groups selected from a weak polar **solvent** group, a strong polar **solvent** group and a **lithium** protection **solvent** group, where the **electrolyte** includes at least one or more **solvents** selected from the same group. The **electrolyte** may optionally

include one or more **electrolyte** salts.

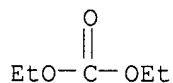
IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0,  
 γ-Butyrolactone 105-58-8, Diethyl carbonate  
 108-88-3, Toluene, uses 109-99-9, Thf, uses  
 110-00-9, Furan 126-33-0, Sulfolane 534-22-5,  
 2-Methylfuran 616-38-6, Dimethyl carbonate 625-86-5,  
 2,5-Dimethylfuran 1330-20-7, Xylene, uses 7439-93-2,  
 Lithium, uses 7791-03-9, Lithium perchlorate  
 14283-07-9, Lithium tetrafluoroborate 21324-40-3  
 , Lithium hexafluorophosphate 33454-82-9,  
 Lithium triflate 90076-65-6  
 RL: DEV (Device component use); USES (Uses)  
 (lithium-sulfur **batteries** with high capacity and  
 good rate capability)  
 RN 96-47-9 HCAPLUS  
 CN Furan, tetrahydro-2-methyl- (8CI, 9CI) (CA INDEX NAME)



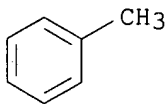
RN 96-48-0 HCAPLUS  
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 108-88-3 HCAPLUS  
 CN Benzene, methyl- (9CI) (CA INDEX NAME)



RN 109-99-9 HCAPLUS  
 CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)

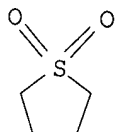


RN 110-00-9 HCAPLUS  
CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)

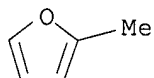


(2)

RN 126-33-0 HCAPLUS  
CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)

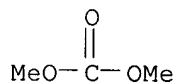


RN 534-22-5 HCAPLUS  
CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)

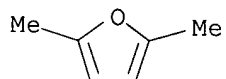


(2)

RN 616-38-6 HCAPLUS  
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 625-86-5 HCAPLUS  
CN Furan, 2,5-dimethyl- (6CI, 8CI, 9CI) (CA INDEX NAME)



(2)

RN 1330-20-7 HCAPLUS  
CN Benzene, dimethyl- (9CI) (CA INDEX NAME)

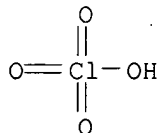


2 ( D1-Me )

RN 7439-93-2 HCAPLUS  
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

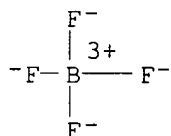
Li

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



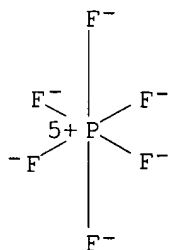
● Li

RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

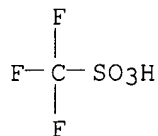
RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

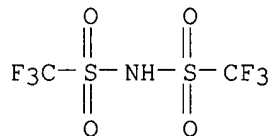
CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IT 74432-42-1, Lithium polysulfide

RL: TEM (Technical or engineered material use); USES (Uses)  
(lithium-sulfur **batteries** with high capacity and  
good rate capability)

RN 74432-42-1 HCAPLUS

CN Lithium sulfide (Li<sub>2</sub>(S<sub>x</sub>)) (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

L188 ANSWER 16 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:850854 HCAPLUS

DN 135:374181

TI Method of manufacturing a polymer gel electrolyte battery or capacitor

IN Sato, Takaya; Shimizu, Tatsuo

PA Nisshinbo Industries, Inc., Japan; Itochu Corporation

SO Eur. Pat. Appl., 24 pp.

CODEN: EPXXDW

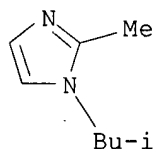
DT Patent

LA English

FAN.CNT 1

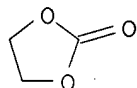
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1156547	A1	20011121	EP 2001-111816	20010515 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001325991	A	20011122	JP 2000-141687	20000515 <--
	CA 2347408	A1	20011115	CA 2001-2347408	20010511 <--
	US 2002042986	A1	20020418	US 2001-853050	20010511 <--
	US 6793692	B2	20040921		
	SG 100695	A1	20031226	SG 2001-2795	20010511 <--

CN 1324117 A 20011128 CN 2001-116134 20010515 <--  
 TW 512556 B 20021201 TW 2001-90111551 20010515 <--  
 EP 1300904 A1 20030409 EP 2003-421 20010515 <--  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, LT, LV, FI, RO, MK, CY, AL, TR  
 US 2004001302 A1 20040101 US 2003-607956 20030627 <--  
 PRAI JP 2000-141687 A 20000515 <--  
 US 2001-853050 A3 20010511 <--  
 EP 2001-111816 A3 20010515 <--  
 AB The invention discloses a method for manufacturing an elec. component, in which  
 ions migrate between electrodes and which provides high efficiency. In  
 the method for manufacturing an elec. component, in which ions migrate between  
 electrodes, an ion conductive polymer layer dissolving ions is formed on  
 an electrode material layer of at least one of a pair of electrode  
 structures which comprise an electrode material layer formed on a current  
 collector. The pair of electrode structures are arranged at opposed  
 positions with the current collector facing outward, and this arrangement  
 is accommodated in an accommodation unit, and liquid electrolyte is injected  
 into the accommodation unit.  
 IT 116680-33-2, NC-IM  
 RL: CAT (Catalyst use); USES (Uses)  
 (method of manufacturing polymer gel electrolyte battery or capacitor)  
 RN 116680-33-2 HCAPLUS  
 CN 1H-Imidazole, 2-methyl-1-(2-methylpropyl)- (9CI) (CA INDEX NAME)

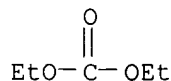


6

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 7791-03-9, Lithium perchlorate 12190-79-3,  
 Cobalt lithium oxide colio2  
 RL: DEV (Device component use); USES (Uses)  
 (method of manufacturing polymer gel electrolyte battery or capacitor)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

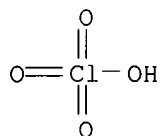


RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)





● Li

RN 12190-79-3 HCAPLUS  
 CN Cobalt lithium oxide (CoLiO<sub>2</sub>) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	1	7440-48-4
Li	1	7439-93-2

IT 109-99-9, Thf, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (method of manufacturing polymer gel electrolyte battery or capacitor)  
 RN 109-99-9 HCAPLUS  
 CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1997	1997		PATENT ABSTRACTS OF	
Basf Ag	2000			DE 19830993 A	HCAPLUS
Clericuzio, M	1995	82	179	SOLID STATE IONICS	
Koninkl Philips Electro	1999			WO 9949531 A	HCAPLUS
Nisshinbo Ind Inc	1996			JP 08225626 A	HCAPLUS
Osaka, T	1998	74	122	JOURNAL OF POWER SOU	HCAPLUS
Sony Corp	2000			EP 1041658 A	HCAPLUS
Sony Corporation	2000			WO 0013252 A	HCAPLUS

L188 ANSWER 17 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:847742 HCAPLUS

DN 136:9010

TI Solid polymer electrolyte

IN Ogawa, Noriyoshi; Kanekawa, Tatsuya

PA Mitsubishi Gas Chemical Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 11 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001325990	A	20011122	JP 2000-141683	20000515 <--

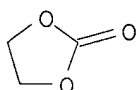
PRAI JP 2000-141683  
GI

20000515 <--

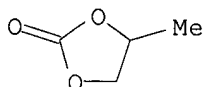
\* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT \*

AB The electrolyte contains an ionizable Group I or Group II metal salt and a copolymer, having limiting viscosity 0.2-2.0 dL/g, and containing repeating units I (R1-4 = H, C1-10 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, or C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents; X = -(CR5R6)<sub>n</sub>-, -S-, -SO<sub>2</sub>-, -O-, -CO-, -SO-, II, or III; R5-6 = H, C1-10 alkyl, C6-12 aryl, C2-5 alkenyl, or C1-5 alkoxy groups that may contain C1-5 alkyl, C2-5 alkenyl or C1-5 alkoxy substituents, or R5 and R6 joined to form a (heterocyclic) ring; R7-8 = H, C1-10 alkyl, C2-10 alkenyl, C1-10 alkoxy, or C6-12 aryl group; a = 0-20 integer) and 20-70 mol% IV (R9-10 = H, C1-5 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents; R11-14 = H, C1-5 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents; R15 = C1-6 alkylene group, alkylidene group, or single bond; Y = polymer or random copolymer of -SiR16R17O- and/or -SiR18R19O- having d.p. 0-200, R16-19 = H, C1-5 alkyl, C6-12 aryl, C2-5 alkenyl, C1-5 alkoxy, C7-17 aralkyl groups and may have C1-5 alkyl, C2-5 alkenyl, or C1-5 alkoxy substituents). The electrolyte is useful for batteries.

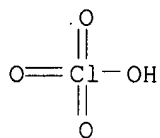
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 7791-03-9, Lithium perchlorate  
RL: DEV (Device component use); USES (Uses)  
(compns. of solid polymer electrolyte containing carbonate ester-siloxane copolymer for secondary lithium batteries)  
RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

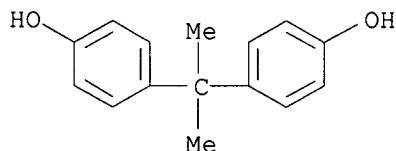


RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

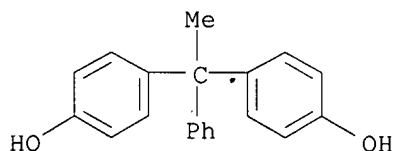


● Li

IT 80-05-7, 2,2-Bis(4-hydroxyphenyl)propane, processes  
 1571-75-1, 1,1-Bis(4-hydroxyphenyl)-1-phenyl ethane  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (in manufacture of solid polymer electrolyte containing carbonate  
 ester-siloxane  
 copolymer for secondary lithium batteries)  
 RN 80-05-7 HCAPLUS  
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



RN 1571-75-1 HCAPLUS  
 CN Phenol, 4,4'-(1-phenylethylidene)bis- (9CI) (CA INDEX NAME)



L188 ANSWER 18 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:780530 HCAPLUS

DN 135:320525

TI Nonaqueous electrolyte secondary battery

IN Nirasawa, Takao; Ito, Hidetoshi; Omaru, Atsuo

PA Sony Corp., Japan

SO Eur. Pat. Appl., 17 pp.

CODEN: EPXXDW

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1148570	A2	20011024	EP 2001-109161	20010412 <--
	EP 1148570	A3	20040908		
	EP 1148570	B1	20060607		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2002008720	A	20020111	JP 2000-333571	20001031 <--

TW 490876	B	20020611	TW 2001-90108532	20010410 <--
CN 1322028	A	20011114	CN 2001-121439	20010418 <--
US 2002018940	A1	20020214	US 2001-837847	20010418 <--
US 6913856	B2	20050705		
US 2005208385	A1	20050922	US 2005-111401	20050421 <--
PRAI JP 2000-122417	A	20000418	<--	
JP 2000-333571	A	20001031	<--	
US 2001-837847	A1	20010418	<--	

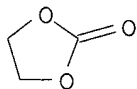
AB A nonaq. electrolyte secondary battery includes a pos. electrode having a pos. electrode active material, a neg. electrode containing a neg. electrode active material capable of being doped/undoped with **lithium**, and a nonaq. electrolyte. The nonaq. electrolyte contains at least one of thiols, thiophenes, thioanisoles, thiazoles, thioacetates, aromatic sulfones, and the derivs. thereof. The capacity of the battery is not significantly degraded after cycling and its cycle life is significantly long.

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 2550-62-1, Methanesulfonic acid, **lithium** salt 7447-41-8, **Lithium** chloride, uses 7550-35-8, **Lithium** bromide 7791-03-9, **Lithium** perchlorate 12190-79-3, Cobalt **lithium** oxide colio2 14283-07-9, **Lithium** tetrafluoroborate 14485-20-2, **Lithium** tetraphenylborate 21324-40-3, **Lithium** hexafluorophosphate 29935-35-1, **Lithium** hexafluoroarsenate 33454-82-9, **Lithium** triflate

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte secondary battery)

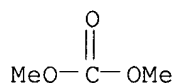
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



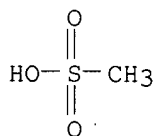
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 2550-62-1 HCAPLUS

CN Methanesulfonic acid, lithium salt (9CI) (CA INDEX NAME)



● Li

RN 7447-41-8 HCAPLUS

CN Lithium chloride (LiCl) (9CI) (CA INDEX NAME)

Cl-Li

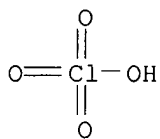
RN 7550-35-8 HCAPLUS

CN Lithium bromide (LiBr) (9CI) (CA INDEX NAME)

Br-Li

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

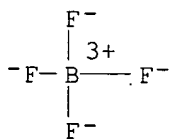
RN 12190-79-3 HCAPLUS

CN Cobalt lithium oxide (CoLiO<sub>2</sub>) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	1	7440-48-4
Li	1	7439-93-2

RN 14283-07-9 HCAPLUS

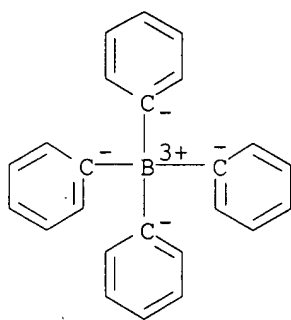
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

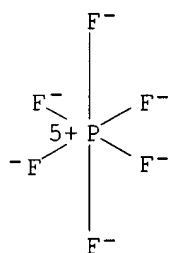
RN 14485-20-2 HCAPLUS

CN Borate(1-), tetraphenyl-, lithium (8CI, 9CI) (CA INDEX NAME)



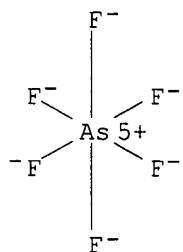
●  $\text{Li}^+$

RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



●  $\text{Li}^+$

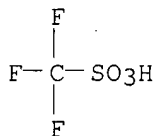
RN 29935-35-1 HCAPLUS  
 CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



●  $\text{Li}^+$

RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 288-47-1, Thiazole  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolyte secondary battery)  
 RN 288-47-1 HCAPLUS  
 CN Thiazole (6CI, 8CI, 9CI) (CA INDEX NAME)



6

L188 ANSWER 19 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 2001:566868 HCAPLUS  
 DN 135:139860  
 TI Electrolytes for dual graphite energy storage system  
 IN Massaro, Lisa Marie; Lewandowski, Thongkhahn P.; Huang, Sui-Yang; Maclean, Gregory Kenneth; Ellis, Heather N.; Orabone, William E., Jr.  
 PA Lion Compact Energy, Inc., USA  
 SO PCT Int. Appl., 29 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001056101	A1	20010802	WO 2001-US2533	20010126 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2365631	A1	20010802	CA 2001-2365631	20010126 <--
AU 2001031161	A5	20010807	AU 2001-31161	20010126 <--
EP 1183746	A1	20020306	EP 2001-903331	20010126 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2003520687	T	20030708	JP 2001-554826	20010126 <--
JP 2003521102	T	20030708	JP 2001-555155	20010126 <--
PRAI US 2000-178177P	P	20000126	<--	
US 2000-178217P	P	20000126	<--	

US 2000-178241P P 20000126 <--  
 WO 2001-US2533 W 20010126 <--  
 WO 2001-US2634 W 20010126 <--

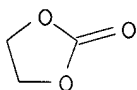
AB There is provided an electrolyte recirculation system including a salt concentration monitor, a pump, and a salt reservoir. Also provided by the present invention is an electrolyte for use in a dual graphite cell, the electrolyte being made of a solvent that dissolves at least 15 weight% salt. There is also provided an electrolyte for use in a dual graphite cell, the electrolyte stable above 5 V. Also provided is an electrolyte for use in a dual graphite cell, the electrolyte including a multiple solvent electrolyte that dissolves in at least 15 weight% LiClO<sub>4</sub>.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium triflate

RL: DEV (Device component use); USES (Uses)  
 (electrolytes for dual graphite energy storage system)

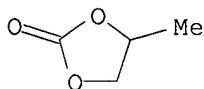
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



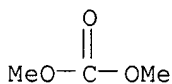
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



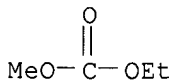
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS

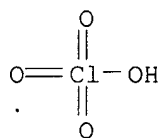
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)

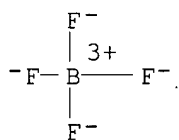




● Li

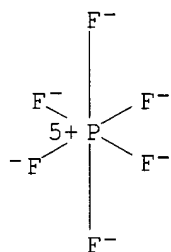
RN 14283-07-9 HCAPLUS

CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

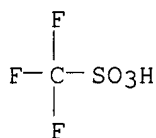
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT 110-00-9, furan  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (electrolytes for dual graphite energy storage system)  
 RN 110-00-9 HCAPLUS  
 CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



(2)

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
McCullough	1989			US 4830938 A	HCAPLUS
McCullough	1989			US 4865931 A	HCAPLUS
McCullough	1996			US 5518836 A	HCAPLUS
McCullough	1996			US 5532083 A	HCAPLUS

L188 ANSWER 20 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:449916 HCAPLUS

DN 135:45792

TI Methods of purifying organic **lithium** salts

IN Gorkovenko, Alexander; Soloveichik, Grigorii L.

PA Moltech Corporation, USA

SO U.S., 16 pp., Cont.-in-part of U.S. Ser. No. 127,468, abandoned.

CODEN: USXXAM

DT **Patent**

LA English

FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 6248883	B1	20010619	US 1998-205873	19981204 <--
WO 2000006538	A1	20000210	WO 1999-US17347	19990729 <--
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
AU 9953293	A1	20000221	AU 1999-53293	19990729 <--
PRAI US 1998-127468	B2	19980731	<--	
US 1998-205873	A	19981204	<--	

WO 1999-US17347 W 19990729 &lt;--

AB Provided are methods of purification of an organic **lithium** salt comprising the steps of: (a) dissolving an impure organic **lithium** salt in a solution comprising an organic complexing solvent; (b) crystallizing from

said solution a solid solvate complex comprising said **lithium** salt and said organic complexing solvent; (c) separating said solid solvate complex from said solution; (d) dissociating said solid solvate complex to yield: (i) said **lithium** salt in a solid form, and, (ii) a volatile composition comprising said organic complexing solvent; and, (e) removing said volatile composition to yield said **lithium** salt in a solid form of purity greater than the purity of said impure **lithium** salt. The present invention also pertains to electrolytes for elec. current producing cells comprising such purified **lithium** salts. Thus, (CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub>NLi was purified by crystallization of the 1,4-dioxane complex and heating under vacuum at 125° to remove the dioxane.

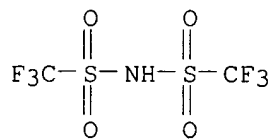
IT 90076-65-6P, **Lithium** bis(trifluoromethylsulfonyl)imide

RL: DEV (Device component use); PUR (Purification or recovery); PREP (Preparation); USES (Uses)

(purification by crystallization of ether complex for use as **battery** electrolyte)

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IT 109-99-9, Tetrahydrofuran, reactions 110-00-9, Furan

RL: NUU (Other use, unclassified); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)

(purification of organic **lithium** salts by ether complexation, crystallization and removal)

RN 109-99-9 HCAPLUS

CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)

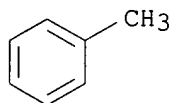


2

IT 7439-93-2DP, Lithium, salts, preparation  
 RL: PUR (Purification or recovery); PREP (Preparation)  
 (purification of organic **lithium** salts by ether complexation,  
 crystallization  
 and removal)  
 RN 7439-93-2 HCAPLUS  
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT 108-88-3, Toluene, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (solvent for purification of organic **lithium** salts by ether  
 complexation, crystallization and removal)  
 RN 108-88-3 HCAPLUS  
 CN Benzene, methyl- (9CI) (CA INDEX NAME)



# RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
=====	=====	=====	=====	=====	=====
Anon	1994			FR 2698631	HCAPLUS
Anon	1997			JP 09255685	HCAPLUS
Armand	1985			US 4505997	HCAPLUS
Bowden	1982			US 4321314	HCAPLUS
Bowden	1989			US 4880714	HCAPLUS
Brouillette	1998	27	151	J Solution Chem	HCAPLUS
Choquette	1998	145	3500	J Electrochem Soc	HCAPLUS
Cotton	1972		199	Advanced Inorganic C	MEDLINE
Couture	1996	74	153	Can J Chem	HCAPLUS
Dominey	1987			Novel Stable, Non-Co	
Kita	1997	68	307	J Power Sources	HCAPLUS
Krause	1997	68	320	J Power Sources	HCAPLUS
Lamanna	1997			US 5652072	HCAPLUS
Langer	1975			US Re28456	
Laverdure	1988		692	Proceedings of the S	HCAPLUS
Lee	1996			US 5538812	HCAPLUS
Luehrs	1976			US 3977900	HCAPLUS
Nalewajek	1990			US 4895778	HCAPLUS
Newman	1981			US 4308324	HCAPLUS
Olsher	1991	91	137	Chem Rev	HCAPLUS
Pacey	1987			US 4659815	HCAPLUS
Pedersen	1971			US 3562295	
Pedersen	1972			US 3687978	
Pedersen	1976			US 3987061	HCAPLUS
Sandman	1988	89	111	J Crystal Growth	HCAPLUS
Stoffel	1991			US 4994110	HCAPLUS
Waddell	1996			US 5514493	HCAPLUS

L188 ANSWER 21 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

jan delaval - 22 january 2007

AN 2001:46267 HCAPLUS  
 DN 134:118341  
 TI Secondary nonaqueous electrolyte batteries using improved anodes and electrolytes, and manufacture of the batteries  
 IN Maekawa, Yukio  
 PA Fuji Photo Film Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 13 pp.  
 CODEN: JKXXAF  
 DT **Patent**  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001015172	A	20010119	JP 1999-240599	19990826 <--
PRAI	JP 1999-118296	A	19990426	<--	

AB Secondary nonaq. electrolyte batteries have cathode sheets containing **Li**-containing mixed rare earth oxides as active materials, anode sheets containing **Li**-intercalatable C materials and having auxiliary layers bonded to **Li**-based metal foils, and nonaq. electrolytes containing **Li** salts and additives selected from hydrazines and aromatic compds. The battery components are assembled and aged for permeation of **Li** into the anodes to give the secondary batteries. The batteries have high capacity.

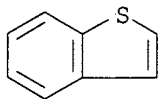
IT **12190-79-3**, Cobalt **lithium** oxide (colio2)  
 RL: DEV (Device component use); USES (Uses)  
 (cathodes; secondary nonaq. electrolyte batteries using anodes bonded to **Li**-containing foils and electrolytes containing hydrazines and/or aromatic compds.)

RN 12190-79-3 HCAPLUS  
 CN Cobalt lithium oxide (CoLiO2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	1	7440-48-4
Li	1	7439-93-2

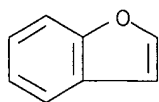
IT **95-15-8**, Benzothiophene **271-89-6**, Benzofuran  
 RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)  
 (electrolyte solns. containing; secondary nonaq. electrolyte batteries using anodes bonded to **Li**-containing foils and electrolytes containing hydrazines and/or aromatic compds.)

RN 95-15-8 HCAPLUS  
 CN Benzo[b]thiophene (8CI, 9CI) (CA INDEX NAME)



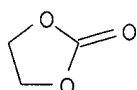
3

RN 271-89-6 HCAPLUS  
 CN Benzofuran (6CI, 8CI, 9CI) (CA INDEX NAME)

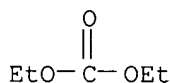


(3)

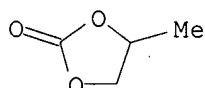
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 108-32-7, Propylene carbonate  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte solns.; secondary nonaq. electrolyte batteries using  
 anodes bonded to Li-containing foils and electrolytes containing  
 hydrazines and/or aromatic compds.)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



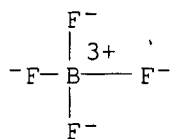
RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



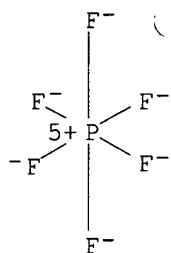
RN 108-32-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



IT 14283-07-9, Lithium tetrafluoroborate 21324-40-3  
 , Lithium hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte; secondary nonaq. electrolyte batteries using anodes  
 bonded to Li-containing foils and electrolytes containing hydrazines  
 and/or aromatic compds.)  
 RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

IT 7439-93-2, **Lithium**, uses  
 RL: DEV (Device component use); USES (Uses)  
 (foil; secondary nonaq. electrolyte batteries using anodes bonded to  
**Li**-containing foils and electrolytes containing hydrazines and/or aromatic  
 compds.)  
 RN 7439-93-2 HCAPLUS  
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

L188 ANSWER 22 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2001:46265 HCAPLUS

DN 134:118340

TI Ionic conductors and secondary **lithium** ion batteries using them

IN Tsuchiya, Shuji; Nanai, Satonari

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	-----	-----	-----
PI	JP 2001015166	A	20010119	JP 1999-187276	19990701 <--

jan delaval - 22 january 2007

PRAI JP 1999-187276

19990701 &lt;--

AB Solid or gelled ionic conductors contain (non)ionic polymers, N,N'-disubstituted imidazolium compds. or aromatic group-containing quaternary ammonium compds., and other cations. Secondary Li ion batteries using electrolyte solns. containing the solid or gelled ionic conductors show high ionic conductivity and high capacity.

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

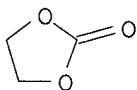
108-32-7, Propylene carbonate

RL: DEV (Device component use); USES (Uses)

(electrolyte solution; ionic conductors containing (non)ionic polymers, imidazolium compds. or quaternary ammonium compds., and other cations for secondary Li ion battery electrolytes)

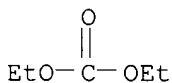
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



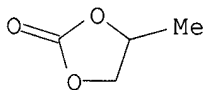
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



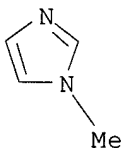
IT 616-47-7, 1-Methylimidazole

RL: RCT (Reactant); RACT (Reactant or reagent)

(in preparation of imidazolium compds.; ionic conductors containing (non)ionic polymers, imidazolium compds. or quaternary ammonium compds., and other cations for secondary Li ion battery electrolytes)

RN 616-47-7 HCAPLUS

CN 1H-Imidazole, 1-methyl- (9CI) (CA INDEX NAME)



⑥

IT 7439-93-2DP, Lithium, complexes with imidazolium compds. or quaternary ammonium compds. and polymers, uses 21324-40-3DP, Lithium hexafluorophosphate, complexes with imidazolium compds. or quaternary ammonium compds. and polymers

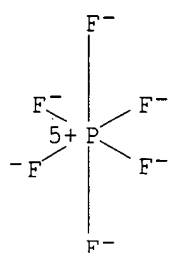


RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)  
 (ionic conductors containing (non)ionic polymers, imidazolium compds. or quaternary ammonium compds., and other cations for secondary **Li** ion battery electrolytes)

RN 7439-93-2 HCAPLUS  
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

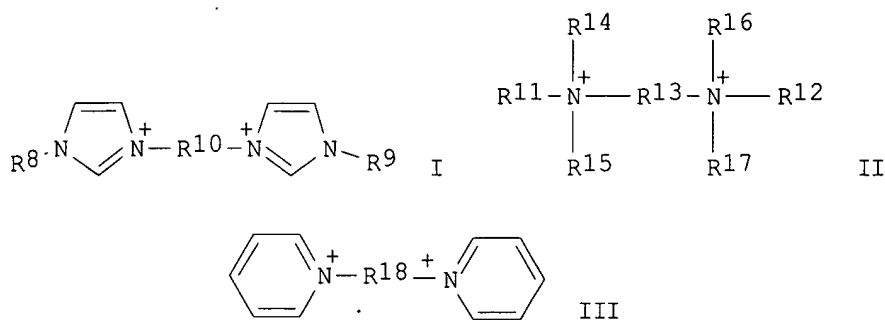
RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

L188 ANSWER 23 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 2000:723536 HCAPLUS  
 DN 133:298800  
 TI Carbonaceous materials and their manufacture, vanadium oxide derivatives, solid ion conductive electrochemical elements, and secondary nonaqueous electrolyte batteries  
 IN Watanabe, Kazuhiro; Nichogi, Katsuhiro; Nanai, Satonari; Miyamoto, Akihito  
 PA Matsushita Electric Industrial Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 16 pp.  
 CODEN: JKXXAF  
 DT **Patent**  
 LA Japanese  
 FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	---	----	-----	-----
PI	JP 2000285921	A	20001013	JP 1999-155011	19990602 <--
PRAI	JP 1998-163134	A	19980611	<--	
	JP 1999-16754	A	19990126	<--	
OS	MARPAT 133:298800				
GI					



AB The carbonaceous materials are heat treated hardened resin, and are prepared by mixing the resin with an aromatic compds. having 2-10 rings and hardening the mixture. The solid ion electrochem. elements contain cations selected from imidazole radical ion or its derivative, having aliphatic C connected to the

N atoms, quaternary ammonium ion, I (R8 and R9 = substituents having aliphatic C connected directly to N; R10 = aliphatic C containing group), II (R14-R17 = substituents having aliphatic C connected directly to N; R11-R13 = C containing groups which may also contain aromatic groups), III (R18 = substituent containing aliphatic C), and IV (R21 and R22 = substituents having aliphatic C connected directly to N) mixed with other cations, e.g., metal ions selected from alkali metals, alkaline earth, Ag, Cu, and Zn. The batteries use the carbonaceous material for Li intercalating anodes, the conductive material as solid electrolyte, and V oxide derivs., AxV4-zMzO11 or AxBzV4-zMzO11 (A and B and M are metals, x ≤, y ≤4, and z ≤4) for cathodes.

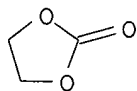
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-47-7D, 1-Methylimidazole, reaction products with dibromo hydrocarbons 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolyte solns. containing quaternary ammonium salts and other salts for secondary lithium batteries)

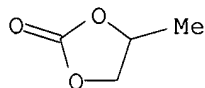
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



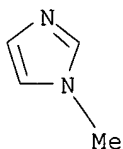
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

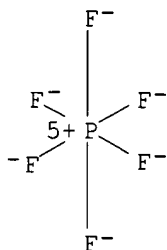


RN 616-47-7 HCAPLUS

CN 1H-Imidazole, 1-methyl- (9CI) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

IT 301358-95-2, Copper **lithium** vanadium oxide  
 (CuLi1.8V4O11) 301358-97-4, **Lithium** vanadium oxide  
 (Li1.8V4O11) 301359-02-4, Copper **lithium** molybdenum  
 vanadium oxide (Cu2Li0.5Mo0.2V3.8O11)  
 RL: DEV (Device component use); USES (Uses)  
 (substituted copper vanadium oxide cathodes for secondary solid  
 electrolyte **lithium** batteries with carbonaceous anodes)  
 RN 301358-95-2 HCAPLUS  
 CN Copper lithium vanadium oxide (CuLi1.8V4O11) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	11	17778-80-2
V	4	7440-62-2
Cu	1	7440-50-8
Li	1.8	7439-93-2

RN 301358-97-4 HCAPLUS  
 CN Lithium vanadium oxide (Li1.8V4O11) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	11	17778-80-2
V	4	7440-62-2
Li	1.8	7439-93-2

RN 301359-02-4 HCAPLUS  
 CN Copper lithium molybdenum vanadium oxide (Cu2Li0.5Mo0.2V3.8O11) (9CI) (CA INDEX NAME)

Component	Ratio	Component
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		Registry Number
O	11	17778-80-2
V	3.8	7440-62-2
Cu	2	7440-50-8
Mo	0.2	7439-98-7
Li	0.5	7439-93-2

L188 ANSWER 24 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 2000:665699 HCAPLUS  
 DN 133:254952  
 TI Polymer electrolyte for **lithium** secondary batteries  
 IN Oyama, Noboru  
 PA Japan  
 SO Eur. Pat. Appl., 32 pp.  
 CODEN: EPXXDW  
 DT **Patent**  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1037294	A2	20000920	EP 2000-105773	20000317 <--
	EP 1037294	A3	20030730		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001189166	A	20010710	JP 2000-70790	20000314 <--
	CA 2301414	A1	20000917	CA 2000-2301414	20000316 <--
	US 6509122	B1	20030121	US 2000-527569	20000316 <--
	CN 1267683	A	20000927	CN 2000-104319	20000317 <--
	AU 770639	B2	20040226	AU 2000-22331	20000317 <--
	US 2003082458	A1	20030501	US 2002-227532	20020826 <--
	US 7105254	B2	20060912		
PRAI	JP 1999-71758	A	19990317	<--	
	JP 1999-295503	A	19991018	<--	
	US 2000-527569	A3	20000316	<--	

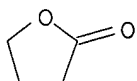
AB A polymer electrolyte providing **lithium** secondary batteries in which growth of **lithium** dendrites is suppressed and batteries exhibiting excellent discharge characteristics in low to high temperature, comprises a polymer gel holding a nonaq. solvent containing an electrolyte. The polymer gel comprises (I) a unit derived from at least one monomer having one copolymerizable vinyl group and (II) a unit derived from at least one compound selected from the group consisting of (II-a) a compound having two acryloyl groups and a (poly)oxyethylene group, (II-b) a compound having one acryloyl group and a (poly)oxyethylene group, and (II-c) a glycidyl ether compound, particularly the polymer gel comprises monomer (I), compound (II-a), and a copolymerizable plasticizing compound

IT **96-48-0**,  $\gamma$ -Butyrolactone **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **288-32-4D**, Imidazole, alkyl derivative **7439-93-2**, **Lithium**, uses **7791-03-9**, **Lithium** perchlorate **14283-07-9**, **Lithium** tetrafluoroborate **21324-40-3**, **Lithium** hexafluorophosphate **29935-35-1**, **Lithium** hexafluoroarsenate **33454-82-9**, **Lithium** triflate **90076-65-6** **131651-65-5** **132404-42-3**

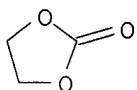
RL: DEV (Device component use); USES (Uses)  
 (polymer electrolyte for **lithium** secondary batteries)

RN 96-48-0 HCAPLUS

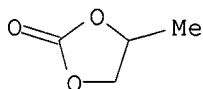
CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



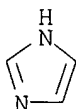
RN 96-49-1 HCAPLUS  
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 288-32-4 HCAPLUS  
CN 1H-Imidazole (9CI) (CA INDEX NAME)

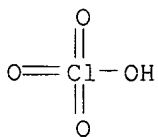


6

RN 7439-93-2 HCAPLUS  
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

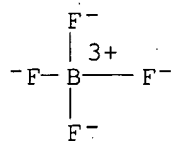
Li

RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



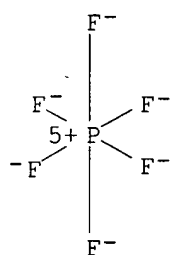
● Li

RN 14283-07-9 HCAPLUS  
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

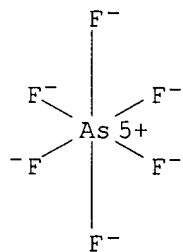
RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

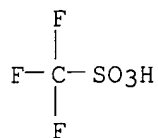
RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

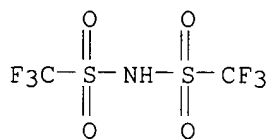
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



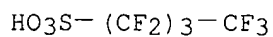
● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-,  
lithium salt (9CI) (CA INDEX NAME)

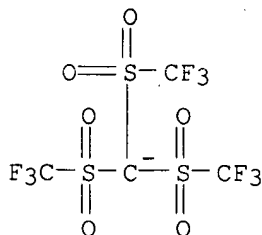
● Li

RN 131651-65-5 HCAPLUS

CN 1-Butanesulfonic acid, 1,1,2,2,3,3,4,4,4-nonafluoro-, lithium salt (9CI)  
(CA INDEX NAME)

● Li

RN 132404-42-3 HCAPLUS

CN Methane, tris[(trifluoromethyl)sulfonyl]-, ion(1-), lithium (9CI) (CA  
INDEX NAME)● Li<sup>+</sup>

L188 ANSWER 25 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 2000:377134 HCAPLUS

DN 132:350299

TI Nonaqueous electrolyte batteries

IN Kita, Akinori; Satori, Kotaro; Komaru, Atsuo; Takahashi, Akio

PA Sony Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 27 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000156243	A	20000606	JP 1998-328506	19981118 <--
PRAI	JP 1998-328506		19981118 <--		
OS	MARPAT 132:350299				

AB The batteries have a nonaq. electrolyte solution containing an organic compound, which

has a reversible redox potential higher than the potential of the fully charged cathode. Preferably, the organic compound has  $\pi$  orbitals and is selected from (halogenated) derivatives of benzene, biphenyl, naphthalene, naphthalic anhydride containing alkyl, alkoxy, amino, and/or nitro groups and coumarin. The additives improves battery safety.

IT **108-32-7**, Propylene carbonate **616-38-6**, Dimethyl carbonate **21324-40-3**, **Lithium** hexafluorophosphate

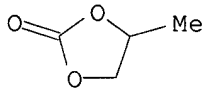
RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte solns. containing aromatic compound additives in secondary

**lithium** batteries for safety)

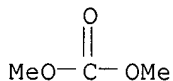
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS

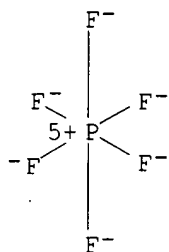
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS

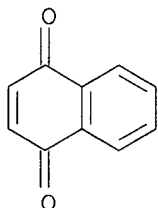
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)





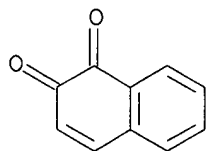
● Li<sup>+</sup>

IT 130-15-4, 1,4-Naphthalenedione 524-42-5,  
 1,2-Naphthalenedione  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (nonaq. electrolyte solns. containing aromatic compound additives in  
 secondary  
 lithium batteries for safety)  
 RN 130-15-4 HCAPLUS  
 CN 1,4-Naphthalenedione (9CI) (CA INDEX NAME)



④

RN 524-42-5 HCAPLUS  
 CN 1,2-Naphthalenedione (9CI) (CA INDEX NAME)



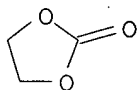
⑤

L188 ANSWER 26 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 2000:133026 HCAPLUS  
 DN 132:154449  
 TI Secondary nonaqueous electrolyte batteries  
 IN Takahashi, Masatoshi; Yasutake, Zensaku; Abe, Hiroshi; Ueki, Akira; Takai,  
 Tsutomu  
 PA Sanyo Electric Co., Ltd., Japan; Ube Industries, Ltd.  
 SO Jpn. Kokai Tokkyo Koho, 15 pp.  
 CODEN: JKXXAF  
 DT Patent

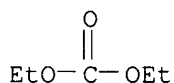
LA Japanese

FAN.CNT 1

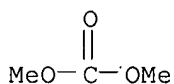
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000058117	A	20000225	JP 1998-218001	19980731 <--
	JP 2983205	B2	19991129		
PRAI	JP 1998-218001		19980731	<--	
OS	MARPAT 132:154449				
AB	The batteries use an electrolyte solution containing a <b>Li</b> salt dissolved in an aromatic ether ROR', where R = C <sub>6</sub> H <sub>5</sub> , allyl, or alkylphenyl group; R' = C <sub>1</sub> -6 alkyl, Ph, allyl, or alkylphenyl group; and R and R' may form a C <sub>5</sub> -6 ring.				
IT	<b>96-49-1</b> , Ethylene carbonate <b>105-58-8</b> , Diethyl carbonate <b>616-38-6</b> , Dimethyl carbonate <b>623-53-0</b> , Ethyl methyl carbonate <b>14283-07-9</b> , <b>Lithium</b> fluoroborate <b>21324-40-3</b> , <b>Lithium</b> hexafluorophosphate RL: DEV (Device component use); USES (Uses) (electrolyte solvents containing aromatic ether derivs. for secondary <b>lithium</b> batteries)				
RN	96-49-1 HCAPLUS				
CN	1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)				



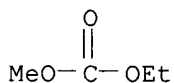
RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



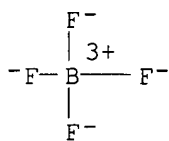
RN 616-38-6 HCAPLUS  
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



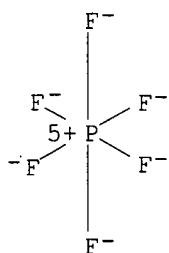
RN 623-53-0 HCAPLUS  
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



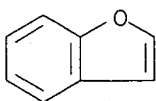
RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

IT 271-89-6, Benzofuran  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (electrolyte solvents containing aromatic ether derivs. for secondary  
**lithium** batteries)  
 RN 271-89-6 HCAPLUS  
 CN Benzofuran (6CI, 8CI, 9CI) (CA INDEX NAME)



3

L188 ANSWER 27 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 2000:95943 HCAPLUS  
 DN 132:125353  
 TI Boron compounds as anion binding agents for nonaqueous **battery**  
 electrolytes  
 IN Lee, Hung Sui; Yang, Xia-ong; McBreen, James; Xiang, Cailli  
 PA Brookhaven Science Associates, USA  
 SO U.S., 11 pp.  
 CODEN: USXXAM  
 DT **Patent**  
 LA English

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6022643	A	20000208	US 1997-986846	19971208 <--
	US 6352798	B1	20020305	US 2000-492569	20000127 <--
PRAI	US 1997-986846	A2	19971208	<--	

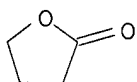
AB Novel fluorinated boron-based compds. which act as anion receptors in nonaq. **battery** electrolytes are provided. The anion receptor is a compound of formula Q3B, where Q is a F-bearing moiety selected from the group of (CF3)2CHO, (CF3)2C(C6H5)O, (CF3)3CO, FC6H4O, F2C6H3O, F4C6HO, C6F5O, CF3C6H4O, and (CF3)2C6H3O. When added to nonaq. **battery** electrolytes, the fluorinated boron-based compds. of the invention enhance ionic conductivity and cation transference number of nonaq. electrolytes. The fluorinated boron-based anion receptors include borane and borate compds. bearing different fluorinated alkyl and aryl groups.

IT **96-48-0**,  $\gamma$ -Butyrolactone **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **109-99-9**, uses **534-22-5**, 2-Methylfuran **616-38-6**, Dimethyl carbonate **7439-93-2**, **Lithium**, uses **7439-93-2D**, **Lithium**, intercalation compound with carbon, uses **7447-41-8**, **Lithium** chloride, uses **7550-35-8**, **Lithium** bromide **7791-03-9** **10377-51-2**, **Lithium** iodide **12057-17-9**, **Lithium** manganese oxide **limn2o4** **12190-79-3**, Cobalt **lithium** oxide **colio2** **14283-07-9**, **Lithium** tetrafluoroborate **18424-17-4**, **Lithium** hexafluoroantimonate **21324-40-3**, **Lithium** hexafluorophosphate **29935-35-1**, **Lithium** hexafluoroarsenate

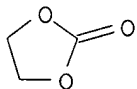
RL: DEV (Device component use); USES (Uses)  
(boron compds. as anion binding agents for nonaq. **battery** electrolytes)

RN **96-48-0** HCAPLUS

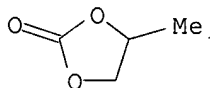
CN **2(3H)-Furanone**, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN **96-49-1** HCAPLUS  
CN **1,3-Dioxolan-2-one** (9CI) (CA INDEX NAME)



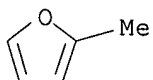
RN **108-32-7** HCAPLUS  
CN **1,3-Dioxolan-2-one**, 4-methyl- (9CI) (CA INDEX NAME)



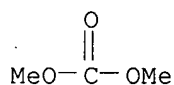
RN **109-99-9** HCAPLUS  
CN **Furan**, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 534-22-5 HCAPLUS  
CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS  
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 7439-93-2 HCAPLUS  
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 7439-93-2 HCAPLUS  
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

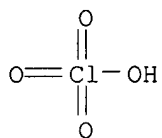
RN 7447-41-8 HCAPLUS  
CN Lithium chloride (LiCl) (9CI) (CA INDEX NAME)

Cl-Li

RN 7550-35-8 HCAPLUS  
CN Lithium bromide (LiBr) (9CI) (CA INDEX NAME)

Br-Li

RN 7791-03-9 HCAPLUS  
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



## ● Li

RN 10377-51-2 HCAPLUS  
 CN Lithium iodide (LiI) (9CI) (CA INDEX NAME)

## I-Li

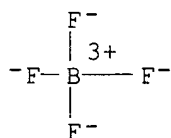
RN 12057-17-9 HCAPLUS  
 CN Lithium manganese oxide (LiMn2O4) (6CI, 7CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Mn	2	7439-96-5
Li	1	7439-93-2

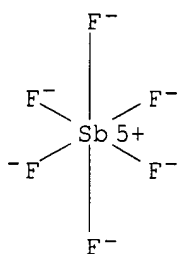
RN 12190-79-3 HCAPLUS  
 CN Cobalt lithium oxide (CoLiO2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	1	7440-48-4
Li	1	7439-93-2

RN 14283-07-9 HCAPLUS  
 CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

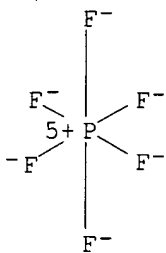
RN 18424-17-4 HCAPLUS  
 CN Antimonate(1-), hexafluoro-, lithium, (OC-6-11)- (9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 21324-40-3 HCAPLUS

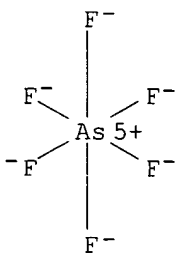
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
----------------------------	---------------	--------------	-------------	--------------------------	--------------------

	Year	Volume	Page	Journal	Category
Angell	1998			US 5849432	HCAPLUS
Castellanos	1995			US 5468902	HCAPLUS
Dejonghe	1989			US 4833048	HCAPLUS
Gregory	1988			US 4752544	HCAPLUS
Huang	1994			US 5278000	
Johnson	1980			US 4201839	HCAPLUS
Lamanna	1996			US 5514728	HCAPLUS
Lee	1996	143	3825	J Electrochem Soc	HCAPLUS
Lonergan	1995	117	2344	J Am Chem Soc	HCAPLUS
Morita	1987	134	2107	J Electrochem Soc	HCAPLUS
Salomon, J	1990	19	1225	Solution Chem	
Schmidtchen	1997	97	1609	Chemical Reviews	HCAPLUS
Schroeder	1960			US 2951871	HCAPLUS
Scrosati	1997			US 5645960	
Shacklette	1985			US 4522901	HCAPLUS
Siedle	1995			US 5416177	HCAPLUS
Sotomura	1997			US 5665492	HCAPLUS
Yang	1994	101	7416	J Chem Phys	
Yang	1989	B40	7948	Phys Rev	

L188 ANSWER 28 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1999:388384 HCAPLUS

DN 131:21348

TI Battery comprising a liquid organic electrolyte with a conductive additive  
IN Green, Kevin John; Wilson, James Charles; Howe, Susan Jennifer; Barnes,  
Philip Nicholas

PA The Secretary of State for Defence, UK

SO PCT Int. Appl., 15 pp.

CODEN: PIXXD2

DT Patent

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9930379	A1	19990617	WO 1998-GB3615	19981208 <--
	W: CN, GB, JP, KR, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	GB 2346256	A	20000802	GB 2000-10773	19981208 <--
	GB 2346256	B	20010822		
	EP 1055262	A1	20001129	EP 1998-959000	19981208 <--
	EP 1055262	B1	20020320		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2001526450	T	20011218	JP 2000-524833	19981208 <--
	ES 2171053	T3	20020816	ES 1998-959000	19981208 <--
	US 6596441	B1	20030722	US 2000-530998	20000509 <--
PRAI	GB 1997-26008	A	19971210	<--	
	WO 1998-GB3615	W	19981208	<--	

AB An electrochem. cell comprises an anode, a solid cathode and an electrolyte. The electrolyte comprises an electrochem. reactive conductive salt, an organic liquid phase comprising one or more organic compds.;

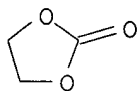
and less than 0.25M of an ionically charged additive, distinct from the electrochem. reactive conductive salt. The additive comprises a conductive salt which in use is not electrochem. reactive and which has a nitrogen containing cation in a sufficient quantity that conductivity is improved and

percentage material utilization of the cathode is improved at increased

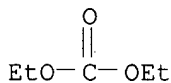


discharge rates as compared with a cell using an electrolyte which does not contain the additive. An improvement of approx. 10% in conductivity is achieved for a cell according to the invention using an electrolyte with an additive.

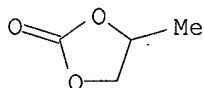
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, uses 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethylcarbonate  
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
 (battery comprising liquid organic electrolyte with conductive additive)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



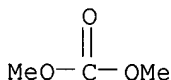
RN 108-32-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



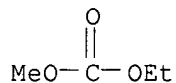
RN 109-99-9 HCAPLUS  
 CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



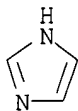
RN 616-38-6 HCAPLUS  
 CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS  
 CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



IT 288-32-4D, 1H-Imidazole, tetraalkylammonium salts, uses  
 7447-41-8, Lithium chloride, uses 7791-03-9,  
 Lithium perchlorate 10377-52-3, Lithium  
 phosphate 12676-27-6  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (battery comprising liquid organic electrolyte with conductive additive)  
 RN 288-32-4 HCAPLUS  
 CN 1H-Imidazole (9CI) (CA INDEX NAME)

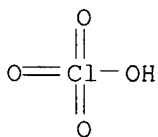


6

RN 7447-41-8 HCAPLUS  
 CN Lithium chloride (LiCl) (9CI) (CA INDEX NAME)

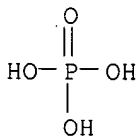
Cl-Li

RN 7791-03-9 HCAPLUS  
 CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 10377-52-3 HCAPLUS  
 CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

RN 12676-27-6 HCAPLUS  
 CN Boric acid, lithium salt (9CI) (CA INDEX NAME)

\*\*\* STRUCTURE DIAGRAM IS NOT AVAILABLE \*\*\*

## RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Centre Nat Etd Spatiale	1994			FR 2704099 A	HCAPLUS
Fuji Photo Film Co Ltd	1997			EP 0785586 A	HCAPLUS
Hirai, T	1994	141	2300	Journal of the Elect	HCAPLUS
Kearney, S	1985			US 4526846 A	HCAPLUS
Matsushita Electric Ind	1988			JP 63301467 A	HCAPLUS
Soffer, A	1979			US 4132837 A	HCAPLUS

L188 ANSWER 29 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1999:113260 HCAPLUS

DN 130:141661

TI Secondary nonaqueous electrolyte batteries

IN Sakai, Kenichi; Yamamoto, Kenji; Ueda, Naoki; Urushibara, Masaru

PA Nippon Denso Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	JP 11040194	A	19990212	JP 1997-192239	19970717 <--
PRAI	JP 1997-192239		19970717	<--	

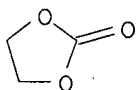
AB The batteries use an electrolyte containing an optical stabilizing agent selected from naphthoquinone, fluorene, epoxides, 1,1-diphenyl-2-picrylhydrazyl compds., and hindered amines.

IT **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate **616-38-6**, Dimethyl carbonate **21324-40-3**, **Lithium** hexafluorophosphate

RL: DEV (Device component use); USES (Uses)  
(nonaq. electrolyte solns. contg, optical stabilizing agents for secondary **lithium** batteries)

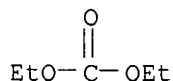
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



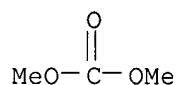
RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



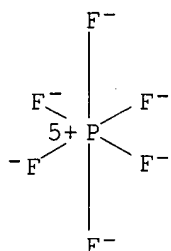
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

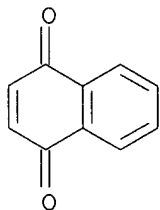
IT 130-15-4, 1,4-Naphthalenedione

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte solns. contg, optical stabilizing agents for secondary **lithium** batteries)

RN 130-15-4 HCAPLUS

CN 1,4-Naphthalenedione (9CI). (CA INDEX NAME)



(4)

L188 ANSWER 30 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1998:421186 HCAPLUS

DN 129:56517

TI Nonaqueous electrolyte batteries and secondary polymer electrolyte batteries

IN Arai, Kayo; Katsumata, Toshio

PA Toshiba Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10172615	A	19980626	JP 1996-336854	19961217 <--

PRAI JP 1996-336854

19961217 &lt;--

AB Nonaq. electrolyte batteries use cathodes, anodes, and/or separators containing a fire retardant which generates a volatile noncombustible substance at high temperature Secondary polymer electrolyte **Li** batteries use cathodes, anodes, and/or electrolyte retaining polymers containing a fire retardant which generates a volatile noncombustible substance at high temperature The fire retardant is preferably tetrabromo bisphenol A or mixts. of tetrabromo bisphenol A and Sb oxide.

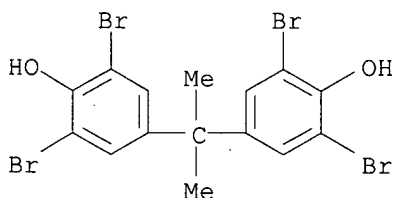
IT **79-94-7**, Tetrabromo bisphenol A **96-49-1**, Ethylene carbonate **616-38-6**, Dimethyl carbonate **12057-17-9**, **Lithium** manganese oxide (LiMn2O4) **21324-40-3**, **Lithium** hexafluorophosphate

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(tetrabromo bisphenol A and antimony oxide fire retardants for electrodes and separators and polymer electrolytes in secondary **lithium** batteries)

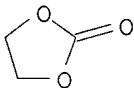
RN 79-94-7 HCAPLUS

CN Phenol, 4,4'-(1-methylethylidene)bis[2,6-dibromo- (9CI) (CA INDEX NAME)



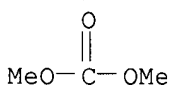
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



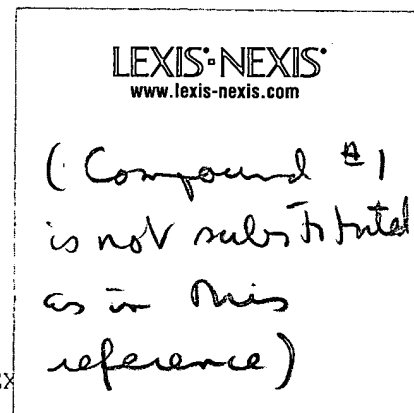
RN 12057-17-9 HCAPLUS

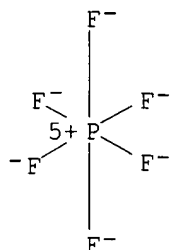
CN Lithium manganese oxide (LiMn2O4) (6CI, 7CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Mn	2	7439-96-5
Li	1	7439-93-2

RN 21324-40-3 HCAPLUS

CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)





● Li<sup>+</sup>

L188 ANSWER 31 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1998:190373 HCAPLUS

DN 128:232785

TI Secondary nonaqueous electrolyte **batteries** with aromatic additives in electrolytes

IN Nishino, Hajime; Kitagawa, Masaki; Ookochi, Masaya; Takeuchi, Takashi; Koshina, Masaru

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10079262	A	19980324	JP 1996-234023	19960904 <--
PRAI	JP 1996-234023		19960904	<--	

AB The **batteries** use Li containing oxide cathodes, Li intercalating carbonaceous anodes, and electrolytes containing 0.1-20 volume% heterocyclic aromatic compound having ≥1 lone electron pairs. The compound is selected from pyridine, pyrimidine, furan, thiophene, and their derivs.

IT **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate

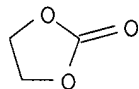
**21324-40-3**, **Lithium** hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(electrolytes containing heterocyclic aromatic additives for secondary **lithium batteries**)

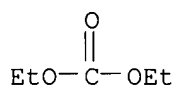
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

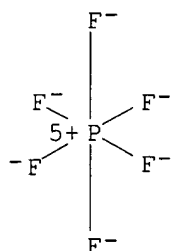


RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

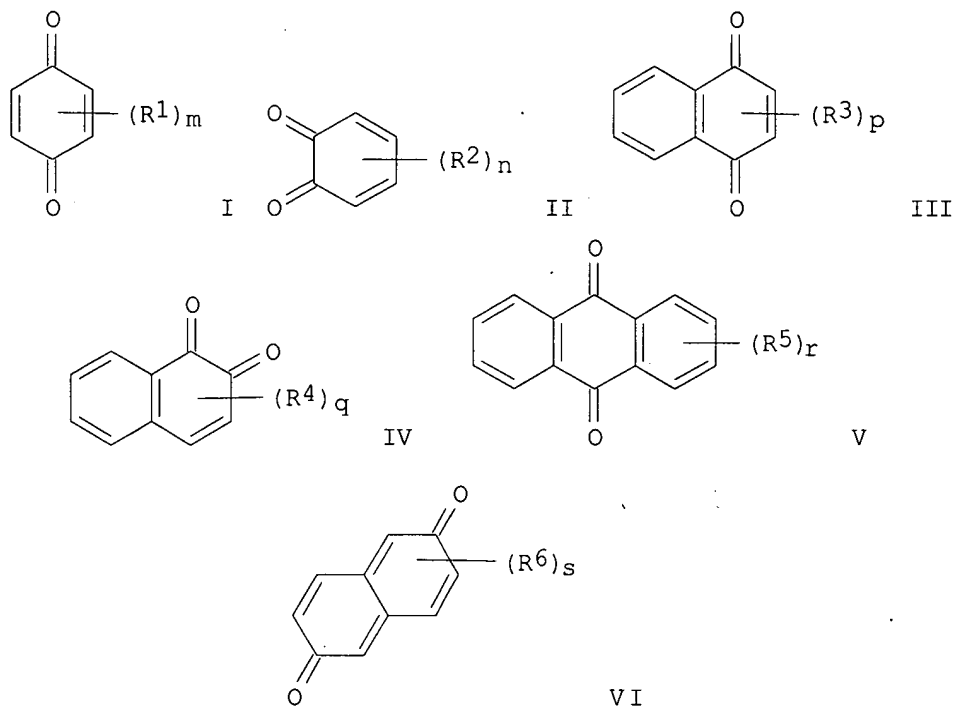
IT 110-00-9, Furan  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (electrolytes containing heterocyclic aromatic additives for secondary  
**lithium batteries**)  
 RN 110-00-9 HCAPLUS  
 CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



(2)

L188 ANSWER 32 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 1998:73247 HCAPLUS  
 DN 128:143160  
 TI Secondary **lithium** batteries using electrolyte solutions  
 containing quinone additives  
 IN Maejima, Toshikazu  
 PA Shin-Kobe Electric Machinery Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DT **Patent**  
 LA Japanese  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10021958	A	19980123	JP 1996-175180	19960704 <--
PRAI	JP 1996-175180		19960704	<--	
OS	MARPAT 128:143160				
GI					



AB The batteries use electrolyte solns. containing 0.001-0.2M quinone derivs. I-VI [m and n = 1-4, p, q, and s = 1-6, r = 1-8, R1-R6 = H, C1-4 alkyl, C6H5, F, Cl, Br, I, OH, OMe, OEt, CN, NH2, NMe2, SO3H, or COOR (R = H or C1-4 alkyl)] and/or their reduction products. The electrolyte solns may also contain 5-25% fire resistant phosphazanes. These additives improve the safety of the batteries.

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate

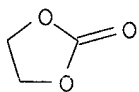
21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)

(secondary lithium batteries using electrolyte solns. containing (hydro)quinone and phosphazene additives)

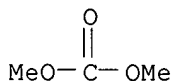
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 616-38-6 HCAPLUS

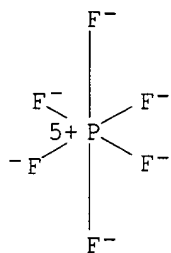
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 21324-40-3 HCAPLUS



CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



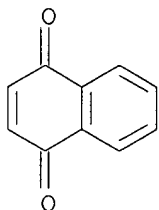
● Li<sup>+</sup>

IT 130-15-4, 1,4-Naphthalenedione 524-42-5,  
1,2-Naphthalenedione

RL: MOA (Modifier or additive use); USES (Uses)  
(secondary **lithium** batteries using electrolyte solns. containing  
(hydro)quinone and phosphazene additives)

RN 130-15-4 HCAPLUS

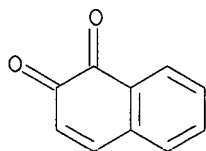
CN 1,4-Naphthalenedione (9CI) (CA INDEX NAME)



(4)

RN 524-42-5 HCAPLUS

CN 1,2-Naphthalenedione (9CI) (CA INDEX NAME)



(5)

L188 ANSWER 33 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1997:273673 HCAPLUS

DN 126:253368

TI **Lithium batteries** using improved electrolytes

IN Jinno, Maruo; Uehara, Mayumi; Yanai, Atsushi; Nishio, Koji; Saito,  
Toshihiko

PA Sanyo Denki Kk, Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09045339	A	19970214	JP 1995-212880	19950728 <--
PRAI	JP 1995-212880		19950728	<--	

AB The **batteries** use LiCF<sub>3</sub>SO<sub>3</sub> or LiPF<sub>6</sub> electrolyte dissolved in an ethylene carbonate based solvent mixture containing 1-20 volume% chain monoethers, chain triethers, chain tetraethers, cyclic ethers, chain carbonate esters, lactones, 3-Pr sydnone, and/or C<sub>6</sub>H<sub>6</sub>. The **batteries** have low self discharge.

IT **71-43-2**, Benzene, uses **96-47-9**, 2-Methyltetrahydrofuran **96-48-0**,  $\gamma$ -Butyrolactone **96-49-1**, Ethylene carbonate **105-58-8**, Diethyl carbonate **109-99-9**, Tetrahydrofuran, uses **110-00-9**, Furan **534-22-5**, 2-Methylfuran **616-38-6**, Dimethyl carbonate **623-53-0**, Ethyl methyl carbonate **56525-42-9**, Methyl propyl carbonate

RL: DEV (Device component use); USES (Uses)  
(compns. of ethylene carbonate based electrolyte solvent mixts. for **lithium batteries**)

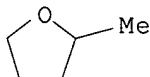
RN **71-43-2** HCAPLUS

CN Benzene (8CI, 9CI) (CA INDEX NAME)



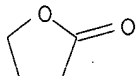
RN 96-47-9 HCAPLUS

CN Furan, tetrahydro-2-methyl- (8CI, 9CI) (CA INDEX NAME)



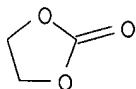
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



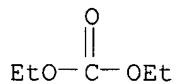
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 109-99-9 HCAPLUS

CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



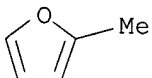
RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



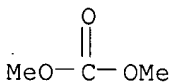
RN 534-22-5 HCAPLUS

CN Furan, 2-methyl- (8CI, 9CI) (CA INDEX NAME)



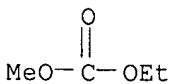
RN 616-38-6 HCAPLUS

CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



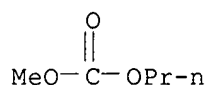
RN 623-53-0 HCAPLUS

CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)

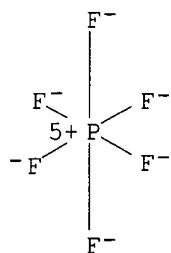


RN 56525-42-9 HCAPLUS

CN Carbonic acid, methyl propyl ester (7CI, 9CI) (CA INDEX NAME)

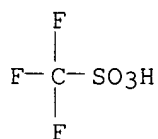


IT 21324-40-3, **Lithium** hexafluorophosphate  
 33454-82-9, **Lithium** trifluoromethanesulfonate  
 RL: DEV (Device component use); USES (Uses)  
 (comps. of ethylene carbonate based solvent mixts. for **lithium**  
 salt electrolytes in **lithium batteries**)  
 RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

L188 ANSWER 34 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 1995:869783 HCAPLUS  
 DN 123:261775  
 TI Nonaqueous-electrolyte **batteries** with improved electrolyte  
 solutions for suppression of self discharge  
 IN Suemori, Atsushi; Shoji, Yoshihiro; Nishio, Koji; Saito, Toshihiko  
 PA Sanyo Electric Co; Japan  
 SO Jpn. Kokai Tokkyo Koho, 4 pp.  
 CODEN: JKXXAF  
 DT **Patent**  
 LA Japanese  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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jan delaval - 22 january 2007

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PI    JP 07192756      A      19950728      JP 1993-327899      19931224 <--
PRAI  JP 1993-327899      19931224 <--

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AB The **batteries** consist of cathodes and **Li** anodes and electrolytes containing LiPF<sub>6</sub>, LiClO<sub>4</sub>, LiCF<sub>3</sub>SO<sub>3</sub>, LiBF<sub>4</sub>, LiAsF<sub>6</sub>, and/or LiN(CF<sub>3</sub>SO<sub>2</sub>)<sub>2</sub> and solvents containing ethylene carbonate, propylene carbonate, butylene carbonate, vinylene carbonate, 1,2-dimethoxyethane, di-Me carbonate, di-Et carbonate, Et Me carbonate, THF, and/or 1,3-dioxolane, where the electrolyte solns. are added with furan resins. The furan resins may be phenol-furfural resins, furfural-acetone resins, furfuryl alc. resins, and/or their derivs. The **batteries** suppress self discharge and have good storage stability.

IT **7439-93-2, Lithium**, uses  
 RL: DEV (Device component use); USES (Uses)  
 (anode; nonaq. electrolyte solns. containing furan resins for **Li batteries** for suppressing self discharge)

RN 7439-93-2 HCAPLUS

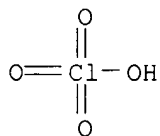
CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT **7791-03-9, Lithium** perchlorate **14283-07-9, Lithium** tetrafluoroborate **21324-40-3, Lithium** hexafluorophosphate **29935-35-1, Lithium** hexafluoroarsenate **33454-82-9, Lithium** trifluoromethanesulfonate **90076-65-6, Lithium** bis(trifluoromethylsulfonyl)amide  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte; nonaq. electrolyte solns. containing furan resins for **Li batteries** for suppressing self discharge)

RN 7791-03-9 HCAPLUS

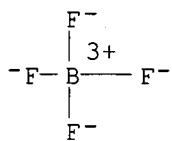
CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



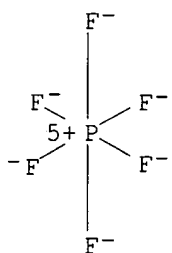
● Li

RN 14283-07-9 HCAPLUS

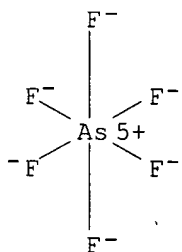
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

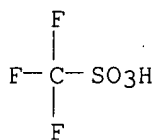
RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

RN 29935-35-1 HCAPLUS  
 CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

● Li<sup>+</sup>

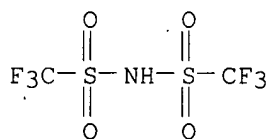
RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

RN 90076-65-6 HCAPLUS

CN Methanesulfonamide, 1,1,1-trifluoro-N-[(trifluoromethyl)sulfonyl]-, lithium salt (9CI) (CA INDEX NAME)



● Li

IT 110-00-9D, Furan, derivs., polymers

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte solns. containing furan resins for Li batteries for suppressing self discharge)

RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



(2)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

108-32-7, Propylene carbonate 109-99-9, Tetrahydrofuran,

uses 616-38-6, Dimethyl carbonate 623-53-0, Ethyl

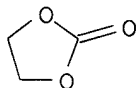
methyl carbonate 4437-85-8, Butylene carbonate

RL: DEV (Device component use); USES (Uses)

(solvent; nonaq. electrolyte solns. containing furan resins for Li batteries for suppressing self discharge)

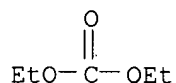
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

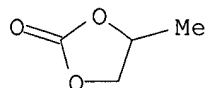


RN 105-58-8 HCAPLUS

CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



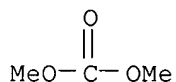
RN 108-32-7 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



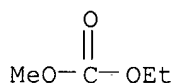
RN 109-99-9 HCAPLUS  
CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



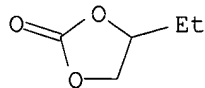
RN 616-38-6 HCAPLUS  
CN Carbonic acid, dimethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-53-0 HCAPLUS  
CN Carbonic acid, ethyl methyl ester (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



L188 ANSWER 35 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
AN 1994:195934 HCAPLUS  
DN 120:195934  
TI Dispersion alloy anodes for **batteries**  
IN Yamauchi, Goro; Laman, Fred; Moriya, Kunio  
PA Advanced Energy Technologies Inc., Can.  
SO U.S., 9 pp.



CODEN: USXXAM

DT Patent  
 LA English  
 FAN.CNT 1

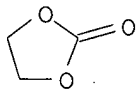
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5278005	A	19940111	US 1992-864266	19920406 <--
PRAI	US 1992-864266		19920406	<--	

AB The anode material comprises a fine and uniform dispersion of second phase particles in **lithium**. The particles have an average particle size of 0.5-40  $\mu\text{M}$  and are present at a concentration of 0.1-10 atomic%. The anode material exhibits a reduction in dendrite and mossy **Li** formation, while maintaining the necessary mech. properties of the material for easy working. The new anode demonstrates excellent cell performance and thermal stability.

IT **96-49-1**, 1,3-Dioxolan-2-one **108-32-7**, Propylene carbonate **110-00-9**, Furan **29935-35-1**, Arsenic **lithium** fluoride (aslif6)  
 RL: DEV (Device component use); USES (Uses)  
 (electrolyte, in **batteries** with **lithium** dispersion alloy anodes)

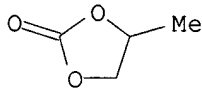
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 110-00-9 HCAPLUS

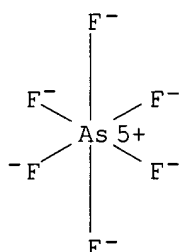
CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 29935-35-1 HCAPLUS

CN Arsenate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

(2)

● Li<sup>+</sup>

L188 ANSWER 36 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1994:151069 HCAPLUS

DN 120:151069

TI Ionic conductive polymer electrolytes

IN Kono, Michuki; Motogami, Kenji; Mori, Shigeo

PA Dai Ichi Kogyo Seiyaku Co Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

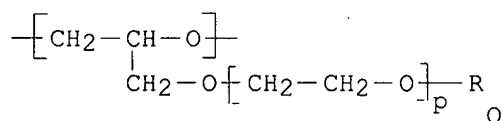
CODEN: JKXXAF

DT Patent

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05202281	A	19930810	JP 1992-34368	19920124 <--
	JP 3149247	B2	20010326		
	US 6019908	A	20000201	US 1992-998021	19921229 <--
PRAI	JP 1992-34368	A	19920124	<--	
GI					



AB The title electrolytes comprise organic polymers described by the general formula Z[(E)m(A)nY]k (I; Z = active H-containing compound residue; Y = active

H

group, polymerizable reactive functional group; k = 1-12; E = Q; p = 0-25; R = C1-20 alkyl, alkenyl, aryl, alkylaryl; A = CH<sub>2</sub>CH<sub>2</sub>O; m = 1-220; n = 1-240; m + n ≥ 4; E and A are linked randomly) with average mol. weight 500-50,000 crosslinked either by the reaction of active H-terminated compds. with crosslinkers or by polymerization of functional group-terminated compds., soluble electrolyte salts, and ≥ 1 organic solvent selected from THF, 2-methyltetrahydrofuran, 1,3-dioxolane, 4,4-dimethyl-1,3-dioxolane, γ-butyrolactone, ethylene carbonate, sulfolane, 3-methylsulfone (sic), tert-Bu ether, iso-Bu ether, 1,2-dimethoxyethane, 1,2-ethoxymethoxyethane, and ethylene glycol di-Et ether. Thus, 18 g glycerin was treated with a mixture of 730 g diethylene glycol glycidyl Me ether and 182 g ethylene oxide in the presence of KOH to give 876 g

polyether with mol. weight 4700, which was esterified with 1.1 equivalent acrylic acid to give acrylate-terminated polyether with mol. weight 4862. A solution containing the polyether 3.6, propylene carbonate 3.6, LiClO<sub>4</sub> 0.4, and 1-hydroxycyclohexyl Ph ketone 0.04 g was cast on a glass plate and UV-irradiated to give a 100  $\mu$ m-thick polymer electrolyte which showed ionic conductivity  $9.2 \times 10^{-4}$  S/cm at 20°,  $5.1 \times 10^{-4}$  S/cm at 0°, and  $2.5 \times 10^{-4}$  S/cm at -20°.

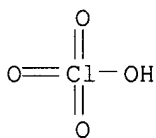
IT **7791-03-9, Lithium perchlorate**

RL: USES (Uses)

(crosslinked polyethers containing organic solvents and, for electrolytes, ionic conductive, stable at low temps.)

RN 7791-03-9 HCAPLUS

CN Perchloric acid, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT **14283-07-9, Lithium tetrafluoroborate 33454-82-9**

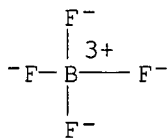
, Trifluoromethanesulfonic acid lithium salt

RL: USES (Uses)

(electrolytes from crosslinked polyethers containing organic solvents and, ionic conductive, stable at low temps.)

RN 14283-07-9 HCAPLUS

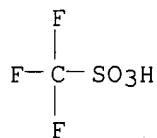
CN Borate(1-), tetrafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



● Li<sup>+</sup>

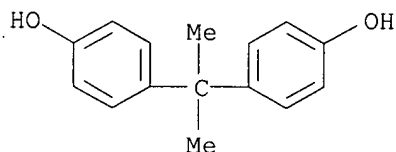
RN 33454-82-9 HCAPLUS

CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)

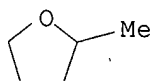


● Li

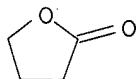
IT **80-05-7DP**, Bisphenol A, reaction products with polyoxyethylene glycidyl Me ether and ethylene oxide, p-vinylbenzoates, polymers  
 RL: PREP (Preparation)  
 (preparation of, crosslinked, for electrolytes, containing **lithium** trifluoromethanesulfonate and organic solvents, ionic conductive, stable at low temps.)  
 RN 80-05-7 HCAPLUS  
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



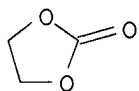
IT **96-47-9**, 2-Methyltetrahydrofuran **96-48-0**,  
 γ-Butyrolactone **96-49-1**, Ethylene carbonate  
**108-32-7**, Propylene carbonate **109-99-9**, Tetrahydrofuran,  
 uses **126-33-0**, Sulfolane **4437-85-8**, Butylene carbonate  
 RL: USES (Uses)  
 (solvent, for ionic conductive polymer electrolytes)  
 RN 96-47-9 HCAPLUS  
 CN Furan, tetrahydro-2-methyl- (8CI, 9CI) (CA INDEX NAME)



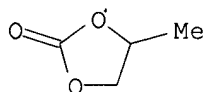
RN 96-48-0 HCAPLUS  
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



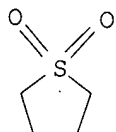
RN 108-32-7 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



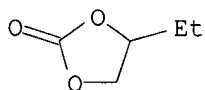
RN 109-99-9 HCAPLUS  
CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 126-33-0 HCAPLUS  
CN Thiophene, tetrahydro-, 1,1-dioxide (8CI, 9CI) (CA INDEX NAME)



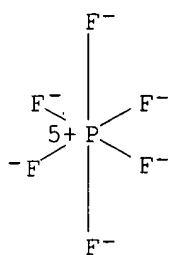
RN 4437-85-8 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



L188 ANSWER 37 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
AN 1994:58562 HCAPLUS  
DN 120:58562  
TI Nonaqueous-electrolyte **lithium** batteries with storage stability  
and charge-discharge efficiency  
IN Watanabe, Hiroshi; Yoshimura, Seiji; Takahashi, Masatoshi; Ooshita, Ryuji;  
Furukawa, Sanehiro  
PA Sanyo Electric Co, Japan  
SO Jpn. Kokai Tokkyo Koho, 7 pp.  
CODEN: JKXXAF  
DT **Patent**  
LA Japanese  
FAN.CNT 1

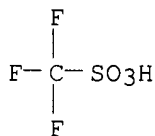
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 05258753 A 19931008 JP 1991-287933 19911101 <--  
 JP 3086510 B2 20000911  
 PRAI JP 1991-287933 19911101 <--  
 AB The batteries comprise metal oxide cathodes, **Li** or **Li**  
 -intercalatable anodes, separators, and F-containing **lithium** salt  
 electrolyte dissolved in nonaq. solvents containing ethylene carbonate and S-  
 and/or N-containing heterocyclic compds., preferably thiazole, thiazoline,  
 thiazolizine, thiophene, and/or their derivs.  
 IT **21324-40-3 33454-82-9**  
 RL: USES (Uses)  
 (electrolytes, solvents containing ethylene carbonate and sulfur- and/or  
 nitrogen-containing heterocyclic compds. for)  
 RN 21324-40-3 HCAPLUS  
 CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)



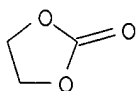
● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS  
 CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

IT **96-49-1**, Ethylene carbonate **288-47-1**, Thiazole  
 RL: USES (Uses)  
 (solvents containing, for electrolytes in **lithium** batteries)  
 RN 96-49-1 HCAPLUS  
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 288-47-1 HCAPLUS

CN Thiazole (6CI, 8CI, 9CI) (CA INDEX NAME)

(6)



L188 ANSWER 38 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1993:452959 HCAPLUS

DN 119:52959

TI Nonaqueous-electrolyte **lithium battery**

IN Watanabe, Hiroshi; Yoshimura, Seiji; Takahashi, Masatoshi; Ooshita, Ryuji; Furukawa, Sanehiro

PA Sanyo Electric Co, Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 05074486	A	19930326	JP 1991-230090	19910910 <--
	JP 3066126	B2	20000717		
PRAI	JP 1991-230090		19910910	<--	

AB The **batteries** use a mixture containing a main solvent and a 2nd solvent, having similar structure to the main solvent but having unsatd. bond, for their electrolyte. A mixture of ethylene carbonate, butylene carbonate, and MeOC<sub>2</sub>H<sub>4</sub>OMe containing vinylene carbonate was used in example.

IT **110-00-9**, Furan

RL: USES (Uses)

(electrolyte solvent mixts. containing, for **lithium batteries**)

RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)

(2)



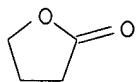
IT **96-48-0**,  $\gamma$ -Butyrolactone **96-49-1**, Ethylene carbonate **108-32-7**, Propylene carbonate **109-99-9**, Tetrahydrofuran, uses **4437-85-8**, Butylene carbonate

RL: USES (Uses)

(electrolyte solvent mixts. containing, vinyl carbonate in, for **lithium batteries**)

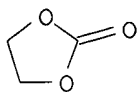
RN 96-48-0 HCAPLUS

CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)

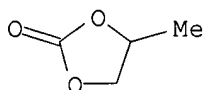


RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



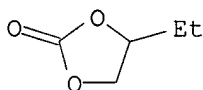
RN 108-32-7 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



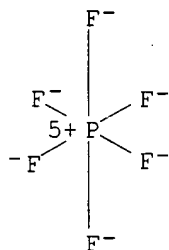
RN 109-99-9 HCAPLUS  
CN Furan, tetrahydro- (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS  
CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



IT 21324-40-3 33454-82-9, Trifluoromethanesulfonic acid  
lithium salt  
RL: USES (Uses)  
(electrolyte, solvent mixts. for, in **lithium**  
**batteries**)  
RN 21324-40-3 HCAPLUS  
CN Phosphate(1-), hexafluoro-, lithium (8CI, 9CI) (CA INDEX NAME)

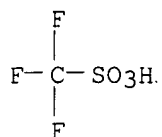


● Li<sup>+</sup>

RN 33454-82-9 HCAPLUS



CN Methanesulfonic acid, trifluoro-, lithium salt (8CI, 9CI) (CA INDEX NAME)



● Li

L188 ANSWER 39 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1992:637171 HCAPLUS

DN 117:237171

TI Secondary **lithium batteries**

IN Sugeno, Naoyuki; Anzai, Masanori; Nagaura, Toru

PA Sony Corp., Japan

SQ Eur. Pat. Appl., 18 pp.

CODEN: EPXXDW

DT **Patent**

LA English

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 486950	A1	19920527	EP 1991-119471	19911114 <--
	EP 486950	B1	19940810		
	R: DE, FR, GB				
	JP 04184872	A	19920701	JP 1990-312481	19901117 <--
	JP 3089662	B2	20000918		
	JP 2000268864	A	20000929	JP 2000-65779	19901117 <--
	JP 3356157	B2	20021209		
	JP 04280082	A	19921006	JP 1991-67998	19910307 <--
	JP 3079613	B2	20000821		
	CA 2055305	A1	19920518	CA 1991-2055305	19911112 <--
	CA 2055305	C	20020219		
	US 5292601	A	19940308	US 1991-792628	19911115 <--
PRAI	JP 1990-312481	A	19901117	<--	
	JP 1991-67998	A	19910307	<--	

AB The **batteries** have **Li**-intercalatable carbonaceous anodes,  $\text{Li}_x\text{MO}_2$  cathodes ( $x = 0.5-1$ ,  $M = \text{Co}$ ,  $\text{Ni}$ , and/or  $\text{Mn}$ ), and electrolyte containing a mixed solvent of 15-75 volume% propylene carbonate and di-Et and/or di-Pr carbonate. The carbonaceous material is obtained from furan resins and petroleum pitches and has a spacing of (002) planes of  $\geq 3.70 \text{ \AA}$  and any DTA exothermic peak at  $\geq 700^\circ$ . The carbonaceous material further comprises 0.2-5.0 weight% P and 0.2-2.0 weight% B.

IT **110-00-9D**, Furan, derivs., polymers

RL: USES (Uses)

(carbonaceous materials from, for **lithium**-intercalating anodes, in **batteries**)

RN 110-00-9 HCAPLUS

CN Furan (7CI, 8CI, 9CI) (CA INDEX NAME)

(2)



IT 7439-93-2, **Lithium**, uses  
 RL: USES (Uses)  
 (carbonaceous materials intercalated with, anodes, for  
**batteries**)  
 RN 7439-93-2 HCAPLUS  
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

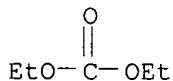
IT 12057-17-9, **Lithium** manganese oxide (LiMn2O4)  
 12190-79-3, Cobalt **lithium** oxide (CoLiO2)  
 RL: DEV (Device component use); USES (Uses)  
 (cathodes, for secondary **lithium batteries**)  
 RN 12057-17-9 HCAPLUS  
 CN Lithium manganese oxide (LiMn2O4) (6CI, 7CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	4	17778-80-2
Mn	2	7439-96-5
Li	1	7439-93-2

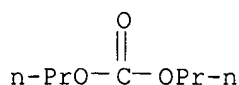
RN 12190-79-3 HCAPLUS  
 CN Cobalt lithium oxide (CoLiO2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	2	17778-80-2
Co	1	7440-48-4
Li	1	7439-93-2

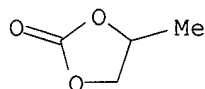
IT 105-58-8, Diethyl carbonate 623-96-1, Dipropyl carbonate  
 RL: USES (Uses)  
 (electrolyte solvent containing, propylene carbonate, for **lithium  
 batteries**)  
 RN 105-58-8 HCAPLUS  
 CN Carbonic acid, diethyl ester (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 623-96-1 HCAPLUS  
 CN Carbonic acid, dipropyl ester (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **108-32-7**, Propylene carbonate  
 RL: USES (Uses)  
 (electrolyte solvent, containing di-Et and/or di-Pr carbonate  
**lithium batteries**)  
 RN 108-32-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



L188 ANSWER 40 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN

AN 1992:491879 HCAPLUS

DN 117:91879

TI Functionalized polyether-type ion-conducting polymer electrolytes

IN Motogami, Kenji; Mori, Shigeo

PA Daiichi Kogyo Seiyaku K. K., Japan

SO Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DT **Patent**

LA Japanese

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 04068064	A	19920303	JP 1990-180355	19900706 <--
	JP 2923542	B2	19990726		
PRAI	JP 1990-180355		19900706 <--		

AB The title polyethers, being used with soluble electrolyte salts and O- and/or N-containing organic solvents, have low glass-transition temperature (T<sub>g</sub>), and are

amorphous polymers obtained by the crosslinking of the active H-containing compound-initiated block or random addition products of glycidyl ethers and C≥3 alkylene oxides which bear terminal functional groups. The amorphous nature of the polymers can prevent the sudden decrease of conductivity

at low temperature as seen in crystalline similar polymers. Thus, the KOH-catalyzed

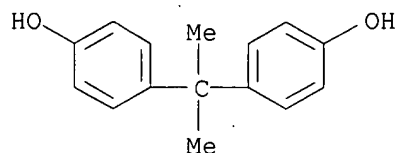
reaction of glycerol initiator 15 with 1,2-epoxybutane 370, then with glycidyl triethylene glycol Me ether 285 g gave a polyether which was esterified with acrylic acid (I) at the OH/I equivalent weight ratio 1.1:1. Heating 3.6 g the acrylate polyether-polyol with 0.12 g LiClO<sub>4</sub> and a MEK solution of photoinitiator under N at 80° for 1 h and in vacuo for 8 h to remove MEK, and impregnating into 1.8 g propylene carbonate gave a title product which showed ion conductivity 1.8x10<sup>-4</sup>, 1.0x10<sup>-4</sup>, and 5.2x10<sup>-5</sup> s/cm

at 20, 0 and -20°, resp.

IT **80-05-7D**, ether with mixed oxirane compds., polymers, polymer with polyisocyanates, **lithium** complexes **7439-93-2D**, **Lithium**, polyether-polyol-based polymer complexes  
 RL: USES (Uses)

(electrolytes, preparation of ion-conducting and amorphous)

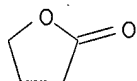
RN 80-05-7 HCAPLUS  
 CN Phenol, 4,4'-(1-methylethylidene)bis- (9CI) (CA INDEX NAME)



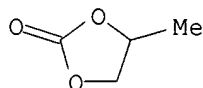
RN 7439-93-2 HCAPLUS  
 CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

IT 96-48-0 108-32-7, Propylene carbonate  
 RL: USES (Uses)  
 (solvents, for amorphous polypolyoxyalkylene-polyol-based acrylic  
 polymers or urethane polymer **lithium** complexes)  
 RN 96-48-0 HCAPLUS  
 CN 2(3H)-Furanone, dihydro- (8CI, 9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS  
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



L188 ANSWER 41 OF 43 HCAPLUS COPYRIGHT 2007 ACS on STN  
 AN 1991:563107 HCAPLUS  
 DN 115:163107  
 TI Mixed-solvent electrolytes for ambient-temperature secondary  
**lithium batteries**  
 IN Shen, David H.; Surampudi, Subbarao; Deligiannis, Fotios; Halpert, Gerald  
 PA California Institute of Technology, USA  
 SO U.S., 11 pp.  
 CODEN: USXXAM  
 DT **Patent**  
 LA English  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 5030528	A	19910709	US 1990-520265	19900507 <--
PRAI	US 1990-520265		19900507	<--	
AB	The electrolytes comprise a solvent of a mixture of ethylene carbonate .apprx.5-30 volume%, EPDM rubber .apprx.0.01-0.1 weight%, 2-methylfuran .apprx.0.2-2 volume%, and balance 2-methyltetrahydrofuran and a conductive				